



NEW ZEALAND

EDICT OF GOVERNMENT


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NZS 4202 (1995) (English): Standard method of measurement of building works

*We will sell to no man,
we will not deny or defer to any man either justice or right.*

Magna Carta—Tūtohingā Nui

*Kore rawa e hoko ki te tangata, e kore e whakakāhoretia,
e tautuku rānei te tangata ki te ture, tika ranei.*



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NZS 4202:1995

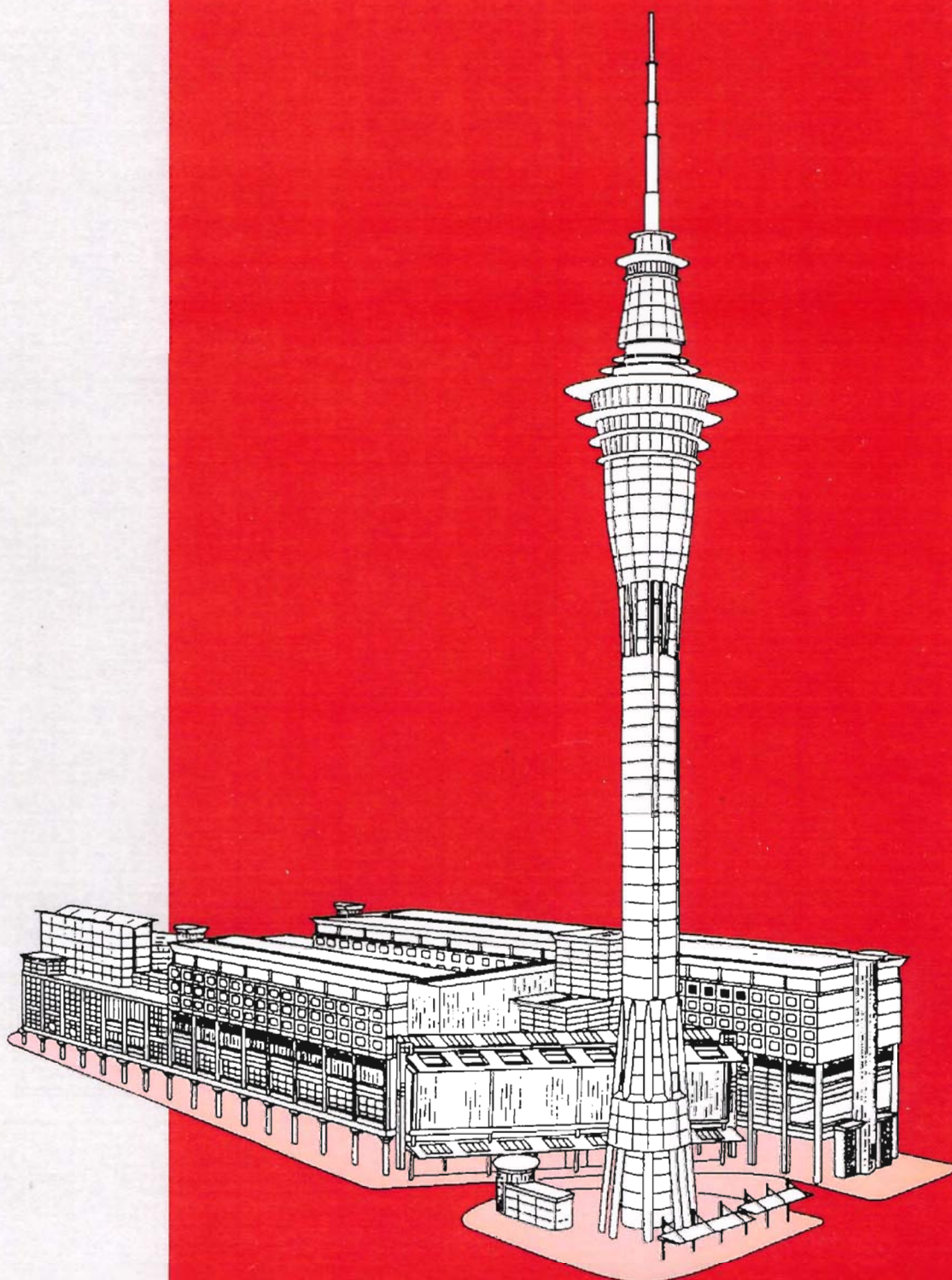


New Zealand Standard

Standard method of measurement of building works

Superseding NZS 4202:1986

NZS 4202:1995



COMMITTEE REPRESENTATION

This Standard was prepared under the direction of the Standards Council, established under the Standards Act 1988.

The Standard Method of Measurement of Building Works Project Committee P4202 was responsible for the preparation of this Standard and consisted of nominees of the following organizations:

- New Zealand Institute of Quantity Surveyors
- New Zealand Master Builders Federation.

ACKNOWLEDGEMENT

Standards New Zealand gratefully acknowledges the contribution of time and expertise from all those involved in developing this Standard.

COVER

Cover illustration of the Sky City Casino Complex provided courtesy of Fletcher Construction.

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Published by Standards New Zealand, the trading arm of the Standards Council, Private Bag 2439, Wellington 6140. Telephone: (04) 498 5990; Fax: (04) 498 5994; Website: www.standards.co.nz.

<i>AMENDMENTS</i>			
<i>No.</i>	<i>Date of issue</i>	<i>Description</i>	<i>Entered by, and date</i>



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RELATED DOCUMENTS

Reference is made in this Standard to the following documents:

NEW ZEALAND STANDARDS	Clause reference herein
NZS 3606:1987 Specification for the manufacture of glue laminated timber	18.3.1
NZS 3631:1988 Classification and grading of New Zealand timbers (National timber grading rules)	17.3.1, 17.3.2
NZMP 3640:1992 Specification of the minimum requirements of the NZ Timber Preservation Council Inc.	18.3.1
NZS 4224:1983 Code of practice for measurement of civil engineering quantities	Foreword 0.3.1

The users of this Standard should ensure that their copies of the abovementioned New Zealand Standards are the latest revisions or include the latest amendments. Such amendments are listed in the annual Standards New Zealand *Catalogue* which is supplemented by lists contained in the monthly magazine *Standards* issued free of charge to committee and subscribing members of Standards New Zealand.

FOREWORD

This Standard was originally published in 1951 as NZS 670 and revised in 1967, in imperial units. In 1972 a metric version of NZS 670:1967, without technical alteration, was published as NZS 4202:1972, and revised in 1975 and 1986.

This revision of the document has been a rationalization and upgrading to cover new materials rather than a radical change.

Attention is drawn to the availability of NZS 4224:1983 *Code of practice for measurement of civil engineering quantities* and it is recommended that that Standard be used where works are substantially of a generally accepted civil engineering nature.

The phrase "and the like" is used extensively throughout the Standard. The intent of its use is to include similar materials and methods to those specifically cited.

In the process of updating NZS 4202, the NZ Master Builders Federation (Inc.) and NZ Institute of Quantity Surveyors "Joint NZS 4202 Revision Committee" have agreed on a definition for a Schedule (Bill) of Quantities, thus:

"Schedule (Bill) of Quantities

A Schedule (Bill) of Quantities is a document that contains descriptions and/or measurements of all items of work required to carry out a given construction project. It shall be in a form that enables pricing by tenderers who will necessarily refer to other tender documents such as drawings, specifications and conditions of contract in the preparation of tenders.

A Schedule (Bill) of Quantities is compiled from information provided in drawings, specifications, conditions of contract and like documents as prepared by the designers. It should be presented in a form to suit trade/industry pricing and tendering practice (generally without need of further measurement) and to suit the monetary administration and financial control of construction projects."

REVIEW OF STANDARDS

Suggestions for improvement of this Standard will be welcomed. They should be sent to the Chief Executive, Standards New Zealand, Private Bag 2439, Wellington 6001.

NEW ZEALAND STANDARD

STANDARD METHOD OF MEASUREMENT OF BUILDING WORKS

SECTION 0 – GENERAL RULES

0.1 SCOPE

0.1.1

The purpose of this Standard Method of Measurement is to provide a uniform basis for the measurement of building works and for the presentation of units of measurement in Schedules (Bills) of Quantities and as such the method embodies the essentials of good practice.

0.1.2

The quantity surveyor is expected to use discretion and to adopt appropriate methods, provided the principles of measurement specified in this Standard Method of Measurement are observed and the information necessary for pricing made clear. Where such discretion has been exercised this shall be stated clearly within the relevant item or group of items.

0.2 INTERPRETATION

0.2.1

For the purposes of interpretation of the Standard the provisions of section 0 take precedence over the relevant provisions of sections 1 to 38 inclusive, unless otherwise specified or stated.

0.3 APPLICATION

0.3.1

This Standard is not intended for use on works principally of a civil engineering nature. In such cases use is recommended of NZS 4224 *Code of practice for measurement of civil engineering quantities*.

0.3.2

The provisions of this Standard shall be applicable equally to the preparation of schedules (bills) of quantities before work is commenced and to the measurement of finished work.

0.4 SCHEDULE (BILL) OF QUANTITIES

0.4.1

The Schedule (Bill) of Quantities shall describe the work to be executed: reference shall be made to the drawings and specifications for the quality of materials and workmanship. Works which by their nature cannot be accurately measured shall be described as “provisional item” or “provisional quantity” as the case may be.

0.4.2

Every item in the Schedule (Bill) of Quantities intended to be priced shall be identified in the unit column.

0.4.3

The quantities in the Schedule (Bill) of Quantities shall be rounded off to the nearest whole unit.

0.4.4

An exception may be made for items of high value under 10 units, which shall then be given correct to one decimal place.

0.4.5

Where the unit is less than one whole unit, the item shall be enumerated and the quantity scheduled in the description.

0.4.6

Quantities scheduled within the description may be given correct to one decimal place except for quantities of mass which shall be in whole kilograms.

0.5 PREAMBLES

0.5.1

Schedules (Bills) of Quantities sections shall commence with preambles which shall make reference to:

- (a) General conditions and special conditions of contract, specification and drawings;
- (b) Preliminaries section of the Schedule (Bill) of Quantities;
- (c) Standard method of measurement with particular reference to these General rules;
- (d) Any exceptional conditions prevailing;
- (e) What the rates are to include (except as provided for in 0.6);
- (f) Special insurances or other provisions relating to damage to adjacent property.

0.6 RATES

0.6.1

The rates for each item in the Schedule (Bill) of Quantities shall be deemed to include:

- (a) Labour and all costs in connection therewith including the labour in setting, fitting and fixing of materials and goods in position ;
- (b) Materials and goods including materials required for lapping, jointing, fixing as appropriate and the like and all costs in connection therewith such as conveyance, delivery, unloading, storing, returning packings, handling, hoisting and lowering;
- (c) Waste of materials;
- (d) Square cutting;
- (e) Overhead costs and profit;
- (f) Establishment;
- (g) Maintenance;
- (h) Protection notwithstanding whether specified elsewhere in this Standard Method of Measurement.

0.7 MEASUREMENT**0.7.1**

All work shall be measured net, as fixed in place, exclusive of laps, corrugations, ribs and the like unless otherwise specified in this Standard Method of Measurement.

0.7.2

Items covering special protection, attendances, guarantees, samples and tests shall be scheduled in each section. Reference shall be made to the applicable specification clauses.

0.8 DESCRIPTION**0.8.1**

In stating dimensions the order shall be consistent and generally in the sequence of length, width and height. Where that sequence is not appropriate or where ambiguity could arise the dimensions shall be specifically identified.

0.8.2

Appropriate sizes, dimensions, girths, thicknesses, mass and other relevant information necessary for the proper assessment of items shall be included in the descriptions including specific reference to drawing detail and/or specification clause numbers.

0.8.3

Patented or proprietary items shall be scheduled and the name of the manufacturer, catalogue reference, finish and other relevant information sufficient to identify the particular product given.

0.8.4

Descriptions of items or headings to groups of items shall contain reference to their general location in the works.

0.8.5

The forming of fair edges, ends, angles, mitres and junctions between straight and raking or curved work shall, unless stated otherwise herein, be held to be included with work in which they occur.

0.8.6

Notwithstanding the provisions of this document for extra values to be measured, such extra values may be included in the description of any item of work on which they occur and this shall be stated.

0.8.7

Circular work shall be measured separately. The term circular shall be deemed to include any form of curve. Work curved in two directions shall be measured separately.

0.8.8

Unless otherwise specified, the removal of temporary works and plant and subsequent making good shall be deemed to be included in the item.

0.8.9

Alterations to existing buildings and other works shall be described separately and in the relevant sections of the schedule.

0.9 OTHER METHODS OF MEASUREMENT

0.9.1

This document acknowledges the possibility of measuring any identifiable section of the works under another method of measurement where such is clearly appropriate and this shall be stated and the method of measurement nominated.

SECTION 1 – PRELIMINARIES

1.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

1.2 GENERAL PRINCIPLES

1.2.1

The form of contract shall be stated by reference.

1.2.2

A general description of the works shall be given, together with the gross floor area where applicable.

1.3 MEASUREMENT PROCEDURE

The following shall be itemised where appropriate:

1.3.1

The general conditions and special conditions of contract.

1.3.2

Compliance with, and the giving of, notices required by any Act of Parliament, by regulations made thereunder, or by the order or direction of any lawful authority, and the paying and indemnifying of the employer against any fees or charges demandable by law thereunder unless stated elsewhere.

1.3.3

The obtaining of necessary approvals from any relevant authority, and the payment of fees payable to such authority in respect of such approvals or otherwise in relation to the building works, unless stated elsewhere.

1.3.4

The provision of separate items for each insurance shall be scheduled and specific reference made to the relevant clauses of general conditions and special conditions of contract.

1.3.5

The provision of a performance bond.

1.3.6

The provision and updating of programmes.

1.3.7

The provision of quality assurance requirements.

1.3.8

The provision of signboards, together with details of signwriting.

1.3.9

Setting out of the works, and the provision of all instruments and labour required by the contract documents for the checking of this work.

1.3.10

The provision of water for the works and any necessary temporary plumbing and storage, and ongoing charges.

- 1.3.11**
The provision of temporary electric power, including connections to local supply authority main, and ongoing charges.
- 1.3.12**
The provision of telephones, including installation and ongoing charges.
- 1.3.13**
Hoardings, gantries, screens, planked footways, rails and lighting, for the protection of the public, shall be described.
- 1.3.14**
The provision of necessary access to the building site including temporary footpath crossings, roads, and similar services.
- 1.3.15**
The provision of sheds, messrooms and attendance, and offices for the site and administration staff, with a full description of such buildings and particulars of furniture, lighting, power, heating and attendance.
- 1.3.16**
The provision of an office for the client representative, with a full description of such building and particulars of furniture, sanitary conveniences, lighting, power, heating and attendance.
- 1.3.17**
The provision of sanitary conveniences and the keeping of the conveniences in a clean and orderly condition.
- 1.3.18**
The care and security of the works.
- 1.3.19**
The management, supervision, and administration of the works by the contractor.
- 1.3.20**
General attendance upon the works by the contractor.
- 1.3.21**
Work to be executed by independent contractors engaged by the employer which does not form part of the contract. Attention shall be drawn to this fact and the item shall describe any facilities to be afforded or work to be done in connection therewith.
- 1.3.22**
Testing of materials and submission of samples.
- 1.3.23**
The provision of plant and tools required for the execution of the works.
- 1.3.24**
The provision of fire fighting equipment.
- 1.3.25**
The provision of scaffolding for exterior work.

- 1.3.26**
The provision of scaffolding for interior work.
- 1.3.27**
The provision of scaffolding for lift shafts.
- 1.3.28**
The provision of temporary screens and other protection requirements. The quantity and/or details of the work to be protected shall be stated.
- 1.3.29**
The protection of the works from weather or any other cause.
- 1.3.30**
Provision for drying the building.
- 1.3.31**
The maintenance and protection of public and private property and the property of water, electricity and gas companies and similar undertakings, and the making good and paying of all damage thereto.
- 1.3.32**
Provision for removal of rubbish and debris and clearing away on completion.
- 1.3.33**
Cleaning all surfaces ready for occupation.
- 1.3.34**
Keeping the building and site free from water.
- 1.3.35**
Provision for where any part of the works may extend below the normal water level or where springs or running water are likely to be encountered. Where known, the water level and any other relevant details shall be given.
- 1.3.36**
The maintenance of the works together with any special requirements.
- 1.3.37**
Contingencies with particulars given of any sums for this purpose.

SECTION 2 – DEMOLITION

2.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

2.2 PREAMBLES

2.2.1

Particulars shall be given of:

- (a) Any exceptional circumstances relating to the works;
- (b) Any special conditions affecting demolition work, particularly with reference to safety, health, nuisance, bylaws and regulations;
- (c) Any condition with respect to salvaged or other materials and the ownership thereof;
- (d) The general method of storage or disposal of salvaged or other materials;
- (e) Inspections or reports on the existing premises;
- (f) Specified measures to be taken to protect existing works or premises on site or adjoining properties.

2.2.2 Rates to include

- (a) Removing all demolished materials, rubbish and debris;
- (b) Temporary shoring and the like and its removal. Where shoring is measured separately this shall be stated.

2.3 GENERAL PRINCIPLES

2.3.1

The rules for detailed demolition given hereinafter apply to alterations to an existing building. Where complete structures are to be demolished one item only may be scheduled which shall include a description of the structure stating its dimensions, number of storeys, nature of its general construction and any other appropriate information.

2.3.2

An item shall be scheduled for obtaining all necessary approvals.

2.3.3

Disconnecting and sealing off services shall be enumerated, the work for each service being scheduled separately.

2.3.4

Provision of temporary hoardings, screens, dust sheets and the like shall be scheduled stating areas, lengths, heights or other information where specified.

2.3.5

Demolition items, whilst adhering to the principles of measurement of new work generally, shall be scheduled with such sizes and descriptions as shall convey the nature and extent of the work involved.

2.3.6 Demolition work involving specific sub-trade work may be scheduled separately in the relevant section of the schedule and this shall be stated.

2.3.7 Items to be removed and which are required to be set aside for salvage or refixing shall be so described.

2.3.8 Making good shall be described and measured.

2.4 MEASUREMENT PROCEDURE

2.4.1 Removal of hazardous substances (such as asbestos) shall be itemised, and the scope of the work described.

2.4.2 Removal of foundations shall be measured in cubic metres and the sectional sizes and the lengths indicated.

2.4.3 Removal of pavings shall be measured in square metres together with all available information relating to thickness.

2.4.4 Concrete work to be demolished shall be measured separately in cubic metres indicating sectional sizes and lengths; work not exceeding 150 mm thick may be measured in square metres stating thickness.

2.4.5 Removal of concrete kerbs, gutters and similar items shall be measured in metres.

2.4.6 Brickwork and masonry to be demolished shall be measured generally in square metres stating the thickness of walls.

2.4.7 The forming of toothings, notchings or halvings, where required to receive new work shall be measured separately.

2.4.8 Demolition of chimney stacks, boiler flues and the like shall be enumerated.

2.4.9 Timber flooring to be demolished shall be measured in square metres and the description shall include all available information concerning the flooring, joists, bearers, strutting and the like.

2.4.10 Demolition of roofs shall be measured in square metres of roof covering. All available information relating to the general construction, flashings, cappings and the like shall be included in the description.

2.4.11 The removal of trusses shall be enumerated.

2.4.12

The removal of doors, windows, fittings and fixtures (e.g., cupboards, counters, sanitary fittings) shall be enumerated and the description shall state whether or not trims and other items in connection (e.g., frames, architraves, sill boards, pelmets, flushing cisterns, taps, pipework) are included.

2.4.13

Timber framed walls, partitions, ceilings and the like to be demolished shall be measured in square metres and the description shall include all available information concerning framing, linings and the like.

2.4.14

Breaking into existing walls, floors, roofs, etc., to form openings, recesses and the like shall be enumerated. New work in making good, trimming, providing lintels, sills, finishings and the like shall be measured separately. If measured in other sections this shall be stated.

2.4.15

Where shoring or temporary support is specified an item shall be measured. Where detailed, the component parts shall be measured and given separately in accordance with the provisions of the appropriate section herein.

SECTION 3 – EXCAVATION

3.1 OVERVIEW

3.1.1

Refer to section 0, General rules, which shall be read in conjunction with this section.

3.1.2

The term “excavation” shall be deemed to include any method of excavation that may be required and getting out excavated materials by any means necessary.

3.2 PREAMBLES

3.2.1

Particulars shall be given of:

- (a) Exceptional conditions relating to the works;
- (b) Reference to records of test bores;
- (c) Ground conditions;
- (d) Existing services;
- (e) Any other available information.

3.2.2 Rates to include

- (a) Excavation in any material encountered other than solid rock;
- (b) Trimming sides and forming batters;
- (c) Levelling off, consolidating bottoms and any staging required.

3.3 GENERAL PRINCIPLES

3.3.1

Excavation, filling, disposal, hardfill and the like shall, unless otherwise required, be scheduled in cubic metres.

3.3.2

All measurement shall be net, that is, no allowance shall be made for either bulking or consolidation. The class of material shall be described by the appropriate name where known.

3.3.3

The description shall give particulars of the disposal of excavated material. Where excavation is cut to fill this shall be stated.

3.3.4

The description shall give particulars for keeping excavations and building sites free from storm and percolating waters by pumping or otherwise. When the excavations extend below the normal water level, the fact shall be stated and, where known, the water level given. Where springs or running water are likely to be encountered, an item shall be included for pumping.

3.4 MEASUREMENT PROCEDURE

3.4.1

Unless otherwise stated, excavations shall be measured in depths of 1.5 m (0-1.5, 0-3.0, 0-4.5, and so on) and the commencing level from which the first stage is measured shall be stated if it is not the general ground level. The minimum allowance for working or boxing space shall be:

- (a) Minimum allowance for working space from wall or projecting footing face

Depth of excavation from commencing level (m)	Working space (m)
not exceeding 0.5	0.2
0.5 to 1.0	0.4
1.0 to 2.0	0.6
2.0 to 3.0	1.0
exceeding 3.0	1.3

- (b) Allowance shall be taken from the wall face or the projecting footing face, whichever gives the greater amount of excavation, and shall be measured for the full depth of the excavation.

3.4.2 Clear site and surface excavation

3.4.2.1

The removal of trees, roots, scrub or similar obstructions shall be measured.

3.4.2.2

An item shall be measured for stripping vegetation if topsoil is to be stockpiled for later re-use.

3.4.2.3

Topsoil or turf to be preserved shall be measured in square metres and the maximum depth stated. The description shall include the distance to cart to stockpile.

3.4.2.4

Surface excavation and site clearing not exceeding 300 mm in depth shall be measured in square metres and the average depth stated.

3.4.2.5

Excavation over 300 mm in depth shall be measured in cubic metres and the maximum depth stated.

3.4.3 Basement

Basement excavation shall be described and measured in accordance with 3.3.

3.4.4 Trench

Trench, footing and pier excavation shall be described and measured in accordance with 3.3. The excavation shall be measured separately for each level from which excavation commences.

3.4.5 Tunnel

Excavation for cuttings and tunnelling shall be described and measured in accordance with 3.3. The length, width, height and sectional area of cutting or tunnel shall be stated.

3.4.6 Rock**3.4.6.1**

Where solid rock is likely to be encountered in the course of excavation it shall be measured as extra value.

3.4.6.2

Separate items shall be measured for excavating rock in:

- (a) Bulk excavation;
- (b) Basement excavation;
- (c) Trench excavation.

3.4.7 Old sites**3.4.7.1**

Breaking up and removal of surface concrete or other hard substances not exceeding 150 mm in thickness shall be measured in square metres, and the thickness stated.

3.4.7.2

Breaking up and removal of brickwork, concrete or other hard substances, other than surface materials, met with in excavation shall be measured in cubic metres as extra value, and sectional size and length stated.

3.4.8 Backfill

Backfill shall be described and measured in accordance with 3.3.

3.4.9 Disposal**3.4.9.1**

The disposal of excavated material shall be described and measured in accordance with 3.3.

3.4.9.2

If the excavated material is to be deposited on the site or at a specified off-site location the distance to be carted shall be stated.

3.4.10 Filling**3.4.10.1**

Filling shall be described by reference to type of material, compaction etc. and be measured as follows:

- (a) Up to 300 mm thickness – square metres (state thickness);
- (b) Over 300 mm thickness – cubic metres.

3.4.10.2

Grading and blinding of the surface of the filling shall be measured in square metres.

3.4.10.3

Where proof rolling or the like of the subgrade is specified an item shall be measured.

3.5 PLANKING AND STRUTTING

3.5.1 General principles

3.5.1.1

Planking and strutting shall be deemed to mean providing everything necessary to retain the sides of excavation by whatever means are necessary.

3.5.1.2

Planking and strutting shall be scheduled full depth to all excavations 1.5 m in depth and over.

3.5.1.3

Irrespective of depth, planking and strutting shall be measured full depth against all public places and adjacent sites, and to all under-pinning.

3.5.1.4

Planking and strutting to excavation circular on plan shall be scheduled separately.

3.5.1.5

Planking and strutting required to be left in shall be scheduled separately.

3.5.2 Measurement procedure

3.5.2.1

Planking and strutting to basement excavation shall be measured in square metres of surface area and the depth, down to the general level of the excavation, shall be stated. Any special shoring specified shall be measured.

3.5.2.2

Planking and strutting to trenches shall be measured to both sides of trenches in square metres as not exceeding 3.0 m, not exceeding 4.5 m, not exceeding 6.0 m in depth and thereafter in depth of 5.0 m stages. The surface level of the trench shall be stated if not the general ground level.

3.5.2.3

Planking and strutting to trenches over 2.0 m in width shall be measured separately and the widths stated.

3.5.2.4

Planking and strutting to pier holes and pits shall be measured separately.

3.5.2.5

Where work is to be constructed involving the shortening of struts or shores and restrutting or reshoring, the planking and strutting shall be measured separately and described.

3.5.2.6

Planking and strutting to tunnelling shall be measured separately in metres. The shape, length, width, height and sectional area of the tunnel shall be stated.

SECTION 4 – UNDERPINNING

4.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

4.2 PREAMBLES

4.2.1

Particulars shall be given of:

- (a) The length of wall to be underpinned;
- (b) The maximum depth of excavation below existing ground level, or reduced level if applicable;
- (c) The lengths and sequence of work to be carried out in one operation;
- (d) Any exceptional conditions relating to the works;
- (e) Any samples or tests required, both of the materials and the finished work.

4.3 GENERAL PRINCIPLES

4.3.1

All the work directly related to Underpinning shall be scheduled in accordance with the various sections of this Standard Method of Measurement unless otherwise stated.

4.3.2

The description shall give particulars of the disposal of excavated material.

4.4 MEASUREMENT PROCEDURE

4.4.1

The sections to be underpinned shall be measured separately stating the length and height of the underpinning and the size, number and sequence of the stages in which the underpinning is to be executed.

4.4.2

The width of excavation shall be taken from the face of the wall or footing to be underpinned whichever is the greater and in accordance with:

(a)

Depth of trench (m)	Width to be taken from wall face (m)
Not exceeding 1.5	1.0
Exceeding 1.5 but not exceeding 3.0	1.5
Exceeding 3.0	2.0

(b) Excavation above and below footing level shall be measured separately.

4.4.3

Planking and strutting for underpinning shall be measured separately in square metres of surface area and the depth stated.

4.4.4

An item shall be measured for temporary shoring and supports to the wall to be underpinned.

4.4.5

Wedging or dry packing shall be measured in metres, where the width does not exceed 300 mm. Where the width exceeds 300 mm wedging or dry packing shall be measured in square metres.

4.4.6

Removal of projecting footings shall be measured in metres. The width and thickness or, where applicable, the measurement in cubic metres shall be stated.

SECTION 5 – PILING

5.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

5.2 PREAMBLES

5.2.1

Particulars shall be given of:

- (a) Any exceptional conditions relating to the works;
- (b) The nature of and access to the site;
- (c) The general contours of the site;
- (d) The water table;
- (e) The strata through which piles are driven or through which boring is to be made;
- (f) Reference to records of test bores;
- (g) The maintenance of a piling log;
- (h) Any other available information.

5.2.2 Rates to include

The shifting of all equipment to the required position for the placing of the pile.

5.3 GENERAL PRINCIPLES

5.3.1

All the work directly related to piling shall be scheduled in accordance with the various sections of this Standard Method of Measurement unless otherwise stated.

5.3.2

An item shall be allowed for the provision, erection, maintenance and removal of equipment for the piling. Reference shall be made to all conditions covering equipment.

5.3.3

Driving or boring shall be scheduled separately and in accordance with the requirements of the piling system.

5.3.4

Attention shall be directed to any temporary excavation that may be required. If defined, temporary excavation should be measured as provided for in section 3.

5.3.5

Where storm or percolating water conditions are likely to be encountered, the provisions of clauses 1.3.34 and 3.3.4 shall apply.

5.3.6

The handling, pitching and the order of placing of the piles shall be enumerated according to their size and length, and whether they are to be placed singly or in clusters.

5.3.7

Test piles shall be scheduled separately and the position of each shall be stated.

5.3.8

Where the piles are to be placed from any level other than existing ground level this shall be stated in the description.

5.3.9

The placing of raking piles shall be scheduled separately.

5.3.10

Rock anchors where specified shall be scheduled generally in accordance with the principles of this section.

5.4 MEASUREMENT PROCEDURE

5.4.1

Piles shall be classified according to type, size, and the length and shall be measured in metres.

5.4.2

Driving shall be measured in metres and classified according to the length of the piles to be driven.

5.4.3

Boring for piles shall be described and measured in metres and classified according to depth and size. Bulbs, bellings and the like shall be enumerated as extra value giving the volume outside the pile shaft.

5.4.4

Disposal of spoil shall be measured.

5.4.5

Liners or casings shall be measured in metres. If left in, this shall be stated.

5.4.6

Cutting piles to required levels, stripping to length, disposal of debris and bending of reinforcement shall be enumerated; if below water or ground level details shall be given.

5.4.7

A provisional item or items shall be scheduled where required to cover the lengthening or shortening of piles where appropriate.

5.4.8

Tests on placed piles shall be described and enumerated.

5.4.9

Piles required to be cast away from the site and subsequently transported shall be so described.

5.4.10

Piles which are driven close together shall be enumerated separately from piles which are driven out of contact with one another and the type and mass of shoe and type of interlock, if any, shall be described.

5.4.11

Shoeing and pointing of timber piles shall be enumerated, and the mass of the shoes and the size of the pile shall be stated.

5.4.12

Trimming of tops of timber piles and ringing with steel bands shall be enumerated.

5.4.13 Sheet piling

5.4.13.1

Steel sheet piling shall be measured in metres and the cross section shall be stated. If no section is specified the area of the sheet piling shall be measured. It shall also be stated whether the sheet piling is to be left in or drawn. Timber sheet piling shall be measured in square metres and the average depth stated.

5.4.13.2

Corner and junction piles and the like to sheet piling shall be measured in metres as separate items. Cutting or burning through steel sheet piling shall be measured in metres as extra value.

SECTION 6 – CONCRETE WORK

6.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

6.2 PREAMBLES

6.2.1 Rates to include

- (a) Screeding slabs;
- (b) Forming stop-work pour joints;
- (c) Curing concrete generally.

6.3 CONCRETE

6.3.1 General principles

6.3.1.1

Unless otherwise provided, concrete shall be scheduled in cubic metres.

6.3.1.2

Deductions shall be made for:

- (a) Linear voids having a sectional area of 0.01 m² and over;
- (b) Openings of 0.20 m² and over;
- (c) Downpipes, boxed sections, cored slabs, ducts and the like having a sectional area of 0.01 m² and over.

6.3.1.3

Volume of reinforcement shall not be deducted.

6.3.1.4

The separate widths and thicknesses shall be stated where practicable.

6.3.1.5

Pouring sequence and any limiting dimensions shall be scheduled where specified.

6.3.1.6

Special curing of concrete shall be scheduled where specified.

6.3.1.7

Reinforced concrete, unreinforced concrete, concrete encasing structural steel, filling hollow members shall each be scheduled separately and so described.

6.3.1.8

Concrete shall be scheduled separately for each mix or strength.

6.3.1.9

Treatment of the finished face of concrete beyond the ordinary depositing, spreading, screeding or levelling shall be scheduled in square metres or metres as appropriate.

6.3.1.10

Treatment to surfaces laid to falls or cross falls shall be scheduled separately.

6.3.1.11

Holding-down bolts, blocks, clips, sleeves and the like shall be enumerated.

6.3.2 Measurement procedure

The following shall be measured separately:

6.3.2.1

Foundations and footings, for each type.

6.3.2.2

Small bases, fence posts, shallow piles and the like, for each type. Where not exceeding 0.2 m³ they shall be enumerated.

6.3.2.3

Machine bases and the like. The total number and the minimum and maximum sizes shall be stated in the description.

6.3.2.4

Bedding to structural steel or metalwork shall be enumerated and the size stated.

6.3.2.5

Slabs, for each thickness. If finished to falls or cross falls, this shall be stated and the average thickness given. The measurement shall be taken across beams. Where the slope exceeds 15 degrees, the angle of pitch shall be given.

6.3.2.6

Beams, lintels, columns and piers shall each be measured separately. The measurement of beams and lintels shall exclude the thickness of the floor or topping. Columns and piers cast integrally with walls shall be measured with the wall and this shall be stated in the description.

6.3.2.7

Walls, stating thickness.

6.3.2.8

Retaining walls, stating thickness.

6.3.2.9

Bands, cornices and projections where not integral with the surrounding concrete.

6.3.2.10

Steps and staircases including strings, soffits, balustrades and landings.

6.3.2.11

Channels, stating the shape, width, and average depth.

6.3.2.12

Upstands and kerbs. Where not exceeding 0.05 m² in section they shall be measured in metres including formwork.

6.3.2.13

Blinding concrete shall be measured in square metres with the thickness stated.

6.4 FORMWORK

6.4.1 General principles

6.4.1.1

Unless otherwise provided, formwork shall be scheduled in square metres and shall be measured as the actual surface area in contact with the concrete. Profiled surfaces shall be measured flat overall.

6.4.1.2

Deductions shall be made for openings of 2.0 m² and over.

6.4.1.3

Formwork shall be measured separately for each type of finish.

6.4.1.4

Applied finishes or after-treatment shall be scheduled separately.

6.4.1.5

Fillets not exceeding 50 mm on face shall be included in the description of formwork. Fillets, chamfers and the like exceeding 50 mm but not exceeding 300 mm shall be scheduled in metres and in square metres if exceeding 300 mm.

6.4.1.6

Raking or circular cutting, rounded or moulded edges shall be scheduled in metres. Moulded stoppings shall be enumerated. The radii shall be stated.

6.4.1.7

Deductions shall not be made for intersections of columns with beams or for similar junctions where they are of different widths. Narrow width items shall not be scheduled where caused by such intersections.

6.4.1.8

Circular cutting shall be scheduled in metres at junctions of rectangular with curved members.

6.4.1.9

Formwork specified to be left in place shall be scheduled separately.

6.4.1.10

Single sided formwork over 1.00 metre in height shall be scheduled separately.

6.4.1.11

Formwork in confined spaces shall be scheduled separately.

6.4.1.12

Formwork to soffits of cambered beams or slabs, where specified, shall be scheduled separately.

6.4.2 Measurement procedure

6.4.2.1

Unless otherwise provided, formwork shall be measured separately according to its position in the structure and classified as follows:

- (a) Vertical surfaces of footings and the like;
- (b) Vertical surfaces of walls;
- (c) Vertical surfaces of columns, piers and the like;
- (d) Flat soffits of suspended slabs. Formwork to slabs 200 mm in thickness and over shall be measured separately. If over 3.0 m in height, the height shall be stated in stages of 1.0 m.
- (e) Sides of beams, lintels and the like;
- (f) Soffits of beams, lintels and the like. If over 3.0 m in height, the height shall be stated in stages of 1.0 m.

6.4.2.2

Small surfaces such as cantilever ends, brackets, ends of steps, caps, bases and the like, shall be enumerated.

6.4.2.3

Cornices and mouldings shall be measured in metres and the girth stated.

6.4.2.4

Curved and sloping work. Sloping upper surfaces in excess of 15 degrees to the horizontal shall be measured.

6.4.2.5

Sides or soffits of concrete, reveals to openings 2.0 m² and over and the like which do not exceed 300 mm wide shall be measured in metres and grouped as:

- (a) Not exceeding 100 mm;
- (b) Over 100 mm and not exceeding 200 mm;
- (c) Over 200 mm and not exceeding 300 mm.

6.4.2.6

Openings of less than 2.0 m² shall be described and enumerated.

6.4.2.7

Forming or cutting grooves, chases and the like shall be scheduled in metres. Holes, mortises, pockets and the like shall be enumerated.

6.4.2.8

Expansion, contraction, and construction joints detailed in the documents or required to be formed in specific locations shall be measured separately and fully described.

6.4.2.9

Joints shall be measured in metres if not exceeding 300 mm wide, or in square metres if exceeding 300 mm.

6.4.2.10

Water stops and the like shall be measured in metres and shall be scheduled immediately following the joint in which they occur. Junctions at changes of direction shall be enumerated.

6.5 DAMP-PROOF SHEETING

6.5.1

Damp-proof sheetings shall be measured in square metres of surface covered. The description shall include material types, the number of layers, the width of laps and any jointing required. Where the sheeting is adhered to a surface the nature of the surface and the method of adhesion shall be described.

6.5.2

Turn-ups and turn-downs shall be measured in metres as extra value.

6.5.3

Penetrations in damp-proof sheetings shall be enumerated.

6.5.4

Permanent protection shall be measured in square metres.

6.6 DAMP-PROOF COATINGS

6.6.1

Damp-proof coatings shall be measured in square metres of surface covered and the nature of the sub base stated. The description shall include material type, the number of coats and the rates of cover.

6.6.2

Permanent protection shall be measured in square metres.

6.7 PRESTRESSED AND POST-TENSIONED WORK

6.7.1 General principles

6.7.1.1

Prestressed work shall be scheduled separately.

6.7.1.2

A general description of the prestressed work and of the system and method of tensioning and jacking shall be stated.

6.7.1.3

The description shall include details of any temporary support to units and any testing specified.

6.7.2 Measurement procedure

6.7.2.1

Detailed quantities shall be measured according to the appropriate sections of this Standard Method of Measurement.

6.7.2.2

Formation of ducts shall be measured separately in metres.

6.7.2.3

Forming and filling of anchorage recesses shall be enumerated.

6.7.2.4

Supply of tendons (measured overall between anchorages) shall be given in kilograms. Each size shall be measured separately.

6.7.2.5

The fixing of each tendon shall be enumerated and the length stated. Degreasing, straightening, cutting to lengths and assembling tendons shall be deemed to be included with the item.

6.7.2.6

Anchorage, spacers, distance-pieces, couplers and the like shall each be enumerated.

6.7.2.7

Tensioning of tendons shall be enumerated. Cutting ends of wires and cables shall be included in the description of the item.

6.7.2.8

Grouting of ducts and filling of grooves shall be measured separately in metres.

6.7.2.9

Special jointing of units and any other specific requirement shall be enumerated.

6.8 PROPRIETARY FLOORING

6.8.1

Rates shall include supply, placing, propping and bracing.

6.8.2

Proprietary flooring components shall be described and measured in square metres. The dimensions for proprietary flooring shall be taken between beams or walls, i.e., the opening size shall be measured.

6.8.3

Deductions shall be made for openings of 1.0 m² and over.

6.8.4

Raking cutting shall be measured in metres.

6.8.5

Trimming and forming of each opening shall be enumerated stating the size.

6.8.6

Fitting around columns or projections shall be enumerated stating the size of notching.

6.8.7

In situ concrete topping shall be described and measured separately under this subsection in square metres and the thickness and volume shall be stated in the description.

6.8.8

Formwork necessary to complete the flooring system shall be measured as provided for in this section.

SECTION 7 – SPRAYED CONCRETE

7.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

7.2 PREAMBLES

7.2.1 Rates to include

- (a) Screeds and screeding slabs;
- (b) Waste and rebound;
- (c) Stop-work joints;
- (d) Curing.

7.3 GENERAL PRINCIPLES

7.3.1

The General Principles of section 6, Concrete work, shall apply to this section except as follows:

- (a) Sprayed concrete shall be scheduled in cubic metres with the thickness and area stated in the description;
- (b) The treatment of the finished face of sprayed concrete shall be scheduled in square metres;
- (c) Separate items shall be given where access is difficult.

7.4 MEASUREMENT PROCEDURE

7.4.1

Clause 6.3 and 6.4 shall apply except that beams, lintels, columns and piers sprayed integral with walls shall be measured with the walls and this shall be stated.

7.4.2

Ties, anchors and the like to existing work shall be described and enumerated.

7.4.3

External angles shall be measured.

7.4.4

Formwork to ends and reveals shall be measured.

SECTION 8 – PRECAST CONCRETE

8.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

8.2 PREAMBLES

8.2.1 Rates to include

- (a) Formwork, moulds and casings;
- (b) Lifting eyes, devices and frames where not detailed;
- (c) Temporary supports where not detailed;
- (d) Forming cambers where required.

8.3 GENERAL PRINCIPLES

8.3.1

Precast concrete work shall be described and classified according to the function, shape and finish.

8.3.2

Taking delivery, hoisting, setting and fixing in position may be measured separately, and the method of scheduling this item shall be clearly stated. Fixing shall be described and classified according to position in the structure. The size and approximate mass shall be stated.

8.3.3

Each item shall be enumerated and shall include the detailed quantities, scheduled according to the appropriate sections of this Standard Method of Measurement unless otherwise stated.

8.4 MEASUREMENT PROCEDURE

8.4.1

Where no definite lengths are stated, sills, copings and similar items shall be measured in metres.

8.4.2

Fixings, bolts or brackets, unless measured elsewhere, shall be enumerated.

8.4.3

Welding required for the fixing of precast units shall be measured in metres, or enumerated as appropriate.

8.4.4

Sealants, pointing, gaskets, damp-proofing and the like shall be measured separately.

8.4.5

Precast paving slabs and the like shall be measured in square metres stating the sizes of slabs (and the methods of bedding and jointing). Raking cutting shall be measured in metres.

SECTION 9 – REINFORCING STEEL

9.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

9.2 PREAMBLES

9.2.1 Rates to include

- (a) Bending and cranking bars as required;
- (b) Hoisting and placing into position including maintaining whilst concrete is being poured ;
- (c) Materials and labours required for securing the reinforcement including chairs, tie wire, spacers and the like;
- (d) Supporting bars required but not shown;
- (e) Laps in fabric reinforcement.

9.3 GENERAL PRINCIPLES

9.3.1

Reinforcing shall be scheduled separately for foundations, floors, walls, columns, beams, roof slabs and the like.

9.3.2

Supporting bars where shown shall be scheduled in accordance with this section.

9.3.3

Structural welding (not being welding for securing reinforcement) shall be enumerated for each bar size and each type of weld.

9.4 BAR REINFORCEMENT

9.4.1 Measurement procedure

9.4.1.1

Bar reinforcement shall be stated in kilograms. All bars shall be measured separately for each type and size including the extra material in laps and hooks.

9.4.1.2

Where not specifically detailed, laps shall be measured at 8.0 m centres.

9.4.1.3

The tables used for calculating the mass of bar reinforcement shall be stated.

9.4.1.4

Bar reinforcement shall be grouped according to type and size and within each group under the following subdivisions.

- (a) Bars;
- (b) Bars exceeding 10.0 m in length in stages of 2.0 m;
- (c) Bars of special form;
- (d) Starter bars;
- (e) Links, stirrups or binders and the like;
- (f) Helical reinforcement.

9.5 STEEL FABRIC REINFORCEMENT

9.5.1 Measurement procedure

9.5.1.1

Steel fabric reinforcement shall be measured in square metres; the net surface area covered shall be measured.

9.5.1.2

Deductions shall be made for all openings having an area of 2.0 m² and over.

9.5.1.3

Raking and circular cutting shall be measured in metres.

9.5.1.4

Cutting at construction joints where shown, shall be measured.

9.5.1.5

Cranking and bending shall be measured in metres.

9.5.1.6

Notching around obstructions and openings of less than 2.0 m² shall be enumerated.

SECTION 10 – STRUCTURAL STEEL

10.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

10.2 PREAMBLES

10.2.1

The tables used for calculating the mass of members shall be stated.

10.2.2 Rates to include

- (a) Supply, fabrication, and delivery;
- (b) Hoisting and erection.

10.3 GENERAL PRINCIPLES

10.3.1

The approximate level of fixing relating to ground level shall be stated.

10.3.2

Schedule items shall be grouped under appropriate headings such as stanchions, beams, portals, trusses and the like.

10.3.3

All structural steelwork shall be scheduled overall as fixed in place, in kilograms, unless otherwise stated.

10.3.4

Galvanized steelwork and the like shall be scheduled separately.

10.3.5

Hollow sections shall be scheduled in metres and the total mass stated in kilograms.

10.3.6

Cold rolled sections shall be scheduled in metres and the total mass stated in kilograms.

10.4 MEASUREMENT PROCEDURE

10.4.1

Each size and shape shall be measured separately and grouped according to its physical position in the structure. The description shall include the number required, the approximate length, forming cambers where required and the mass per metre where appropriate. Curved and/or bent steel members shall be measured separately giving individual radii where appropriate.

10.4.2

The forming of holes shall be enumerated for each thickness of material, and grouped as follows:

- (a) Not exceeding 20 mm diameter;
- (b) Exceeding 20 mm but not exceeding 30 mm diameter;
- (c) Exceeding 30 mm diameter, with each size measured separately.

- 10.4.3** Splay cutting, notching and the like shall be enumerated.
- 10.4.4** Circular and profile cutting shall be measured in metres.
- 10.4.5** Welding shall be measured in metres. The type and size of weld, thickness of metal and whether site or shop welded shall be stated.
- 10.4.6** All preparation of steelwork before welding shall be described. Spot welding and stud welding shall be enumerated. Intermittent welding shall be measured overall stating the spacings.
- 10.4.7** Brackets, cleats, gussets and the like shall be measured separately for each sectional size or thickness of plate and the number of each type shall be stated. The description shall include all cutting.
- 10.4.8** Plates shall have the mass calculated as the smallest size rectangles from which they can be cut.
- 10.4.9** Rivets shall be enumerated and the grip length, diameter and pitch shall be stated.
- 10.4.10** Bolts and studs shall be enumerated, stating the length and diameter. The description shall include washers, lock nuts and the like.
- 10.4.11** The area of steel to be treated or painted shall be measured in accordance with section 35. Fire protection shall be measured separately for each fire rating and steel section size.
- 10.4.12** Where shop drawings and the like are required, an appropriate item shall be scheduled.

SECTION 11 – MASTIC ASPHALTING AND SIMILAR TREATMENTS

11.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

11.2 PREAMBLES

11.2.1 Rates to include

Temporary screeds, grounds and the like.

11.3 GENERAL PRINCIPLES

11.3.1

Mastic asphalt and similar treatments shall be scheduled separately for each type and shall be scheduled in square metres of net surface area. The description shall state whether horizontal, vertical or overhead work. Deductions shall be made for all openings having an area of 0.5 m² and over.

11.3.2

The number of coats and thickness shall be stated.

11.3.3

The nature of the base on which the asphalt is applied shall be stated in the description.

11.3.4

Work on slopes exceeding 10 degrees shall be scheduled separately, and the slope stated.

11.3.5

Work in confined situations, work with less than 1.0 m working space or work that must be carried out overhead, shall be scheduled separately.

11.3.6

Work subject to water pressure shall be scheduled separately.

11.3.7

If work is required to be done in sections specially ordered or not continuously done with the bulk of the work, it shall be so stated.

11.3.8

Felt, expanded metal and the like, where required, shall be described and included with the items to which they apply.

11.4 MEASUREMENT PROCEDURE**11.4.1**

Asphalting over and around pockets, bonding bricks, blocks and the like shall be separately enumerated and the descriptions shall include arrises and fillets in connection therewith.

11.4.2

Pavings and roof coverings shall each be measured separately; if to falls or to falls and cross falls they shall be so described and shall include all labour to intersections. Work to bays, dormers and the like shall be measured separately.

11.4.3

Gutters, kerbs, channels, skirtings, coves, angles, fillets and the like, when forming part of general asphalt work, shall be measured in metres as extra value. Isolated work shall be measured separately.

11.4.4

Outlets, linings to sumps, asphalt collars around pipes, railing standards and the like shall be enumerated.

11.4.5

Permanent protection shall be measured in square metres.

SECTION 12 – BRICKWORK

12.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

12.2 PREAMBLES

12.2.1 Rates to include

- (a) Use of fractional size bricks for bonding purposes;
- (b) Vertical straight cutting;
- (c) Cleanout openings;
- (d) Cleaning on completion;
- (e) Temporary support.

12.3 GENERAL PRINCIPLES

12.3.1

Unless otherwise specified, brickwork shall be scheduled in square metres and the thickness shall be stated.

12.3.2

Exterior work shall be scheduled separately from interior work.

12.3.3

Brickwork shall be scheduled separately for each type of brick, except in composite walls where facings and facework shall be scheduled in square metres as extra value over ordinary brickwork, and the measurements shall include all exposed faces, reveals, projections, and the like.

12.3.4

Walls built fair face both sides or entirely of facing bricks shall be scheduled separately in square metres.

12.3.5

Descriptions shall include details of:

- (a) Type, size and quality of bricks. Purpose-made bricks shall be so described;
- (b) Size of facing bricks where different from those in the body of the work, and the method of bonding such facings to the backings;
- (c) Type of bond;
- (d) Composition of mix and colour of mortar;
- (e) Thickness of joints;
- (f) Type of pointing, tooling or raking out joints;
- (g) The general location and the height to which work rises.

12.3.6

Brickwork shall be scheduled separately for:

- (a) Solid walls;
- (b) Cavity walls;
- (c) Veneer walls;
- (d) Isolated piers;
- (e) Reinforced brickwork;
- (f) Brick damp-proof course;
- (g) Paving;
- (h) Chimneys;
- (j) Refractory linings and flues.

12.4 MEASUREMENT PROCEDURE**12.4.1**

Each skin of brickwork in cavity walls shall be measured and so stated.

12.4.2

Forming cavity including ties shall be described and measured in square metres stating the material to which ties are fixed.

12.4.3

Deductions shall be made for all openings having an area of 0.2 m² and over.

12.4.4

Surface treatments shall be measured separately in square metres.

12.4.5

Forming of external and internal angles shall each be measured separately in metres and the description shall include any special bricks or work involved.

12.4.6

Pointing to grooves, chases, frames and the like shall be measured in metres.

12.4.7

Metal bonding shall be measured in metres.

12.4.8

Forming of rebated reveals shall be measured in metres.

12.4.9

Damp-proof coursing for brickwork shall be measured in metres. The widths and thicknesses shall be stated.

12.4.10

Raking cutting and cutting and bedding to beams and the like shall be measured in metres.

12.4.11

Flaunching to bottom of cavities shall be measured in metres including raking out joints for weepholes.

12.4.12

Rod reinforcement shall be measured in this section in accordance with section 9.

12.4.13

Concrete filling, grouting and the like shall be measured as follows:

- (a) Filling to cavity between skins in square metres stating the width of the cavity;
- (b) Filling to cells of bricks shall be measured in metres.

12.4.14

Centring for openings shall be fully described and enumerated or total length of soffit measured in metres with the number of openings stated. Centring to be left in shall be measured separately.

12.4.15

Where cavities are closed at openings, ends and the like, an item for closing same shall be measured in metres, and the material and method shall be described.

12.4.16

Lintels, rough relieving arches, arches of varying shapes and types and arches of purpose-made bricks shall be enumerated as extra value over ordinary brickwork, and the thickness of the wall, the average girth and the number of rings in height shall be stated.

12.4.17

Projections and pilasters shall be measured in metres and the sizes shall be stated.

12.4.18

Steps shall be measured in metres. The descriptions shall include sizes of risers and treads.

12.4.19

Projecting plinth courses, strings and cornices shall be measured in metres and the number of courses and the projections shall be stated.

12.4.20

All mitres, stoppings and returned ends to the foregoing shall be enumerated. External, internal and irregular angles shall be measured separately.

12.4.21

Copings shall be measured in metres. Ramps, angles, ends, and the like shall be enumerated.

12.4.22

Caps, bases and neckings to pilasters shall be enumerated and the extreme dimensions and girth of mouldings shall be stated.

12.4.23

Surface ornamentations, patterned brickwork, carved panels, corbels and the like exceeding 1.0 m² shall be measured in square metres. Any necessary projections shall be stated and the extra brickwork for the projection shall be included in the description.

- 12.4.24**
Brickwork in chimneys, up to flue level, shall be measured separately and enumerated.
- 12.4.25**
Brickwork in chimney flues shall be measured separately and measured in metres. The number of flues and their sizes shall be stated.
- 12.4.26**
Flue liners shall be measured in metres, with the diameter or size stated. The description shall include fillings and settings.
- 12.4.27**
Parging to flues shall be measured in metres stating the size of the flue.
- 12.4.28**
Firebrick linings shall be measured in square metres and the thickness shall be stated. The description shall include any reference to overhand work, arched work, limited lifts, bonding to backings, and the like. Irregular angles shall be measured in metres.
- 12.4.29**
Boiler seatings and the like shall be described and enumerated stating the size.
- 12.4.30**
Fire surrounds, hearths, hobs, fire bricks, and the like shall be described and enumerated.
- 12.4.31**
The forming or cutting of ducts, chases and the like shall be measured in metres and the size shall be stated.
- 12.4.32**
Raking out for flashings shall be measured in metres; that for stepped flashings shall be measured separately.
- 12.4.33**
Holes for pipes, conduits, electrical boxes and the like shall be enumerated. The description shall include the thickness of brickwork and the finish to both sides of the brickwork.
- 12.4.34**
Air bricks and the like shall be described and enumerated. The thickness of the wall into which they are built shall be stated.

SECTION 13 – BLOCKWORK

13.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

13.2 PREAMBLES

13.2.1 Rates to include

- (a) Use of fractional size blocks for bonding purposes;
- (b) Vertical straight cutting;
- (c) Cleanout openings;
- (d) Cleaning on completion;
- (e) Temporary support.

13.3 GENERAL PRINCIPLES

13.3.1

Unless otherwise specified, blockwork shall be scheduled in square metres and the thickness shall be stated. Blockwork referred to in this section includes any preformed blockwork i.e. concrete masonry, vermiculite masonry, polystyrene blockwork etc.

13.3.2

Exterior work shall be scheduled separately from interior work.

13.3.3

Descriptions shall include details of:

- (a) Type, size and quality of blocks. Purpose-made blocks shall be so described;
- (b) Composition of mix and mortar, and thickness of joint;
- (c) Type of pointing, tooling or raking out joints;
- (d) The general location and the height to which work rises.

13.3.4

Blockwork shall be scheduled separately for:

- (a) Walls; solid filled, intermittently filled or unfilled;
- (b) Single skin walls built fair face both sides;
- (c) Veneer walls;
- (d) Chimneys;
- (e) Isolated piers and columns;
- (f) Blockwork used as formwork. Temporary strutting shall be stated in the description;
- (g) Decorative work.

13.4 MEASUREMENT PROCEDURE

- 13.4.1**
Each skin of blockwork in cavity walls shall be measured and so stated.
- 13.4.2**
Forming cavities including ties shall be described and measured in square metres stating the material to which ties are fixed.
- 13.4.3**
Deductions shall be made for all openings having an area of 0.4 m² and over.
- 13.4.4**
Surface treatments shall be measured separately in square metres.
- 13.4.5**
Half high courses, bond beams, lintels, sills, external angles, tee intersections and the like shall be measured separately in metres as extra value.
- 13.4.6**
Control joints shall be described and measured in metres, including filling or pointing if required.
- 13.4.7**
Pointing to grooves, chases, frames and the like shall be measured in metres.
- 13.4.8**
Metal bonding shall be measured in metres.
- 13.4.9**
Horizontal, raking and circular cutting shall be measured in metres.
- 13.4.10**
Damp-proof coursing for blockwork shall be measured in metres. The widths and thicknesses shall be stated.
- 13.4.11**
Flaunching to bottom of cavities shall be measured in metres including raking out joints for weepholes.
- 13.4.12**
Rod reinforcement shall be measured in this section in accordance with section 9.
- 13.4.13**
Solid filling to blockwork shall be described and measured in square metres for each block thickness.
- 13.4.14**
Intermittent concrete filling to cells of blocks, bond beam or column shall be described and measured separately in metres for each thickness of wall and each type of wall construction.
- 13.4.15**
Filling to cavities between skins shall be described and measured in square metres stating the width of the cavity.

13.4.16

Centring for openings shall be fully described and enumerated or total length of soffit measured in metres with the number of openings stated. Centring to be left in shall be measured separately.

13.4.17

Casings, piers and columns shall be measured in metres stating the overall size.

13.4.18

Set back, projecting courses and the like shall be measured in metres. Isolated, set back, projecting and pattern work shall be described and enumerated.

13.4.19

Where cavities are closed at openings, ends and the like, an item for closing same shall be measured in metres, and the material and method shall be described.

13.4.20

The forming or cutting of ducts, chases and the like shall be measured in metres and the size shall be stated.

13.4.21

Raking out for flashings shall be measured in metres; that for stepped flashings shall be measured separately.

13.4.22

Holes for pipes, conduits, electrical boxes and the like shall be enumerated, stating the thickness of the blockwork.

13.4.23

Ventilation blocks and the like shall be described and enumerated. The thickness of the wall into which they are built shall be stated.

SECTION 14 – STONE MASONRY

14.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

14.2 PREAMBLES

14.2.1 Rates to include

- (a) Straight cutting;
- (b) Cleaning on completion.

14.3 GENERAL PRINCIPLES

14.3.1

Unless otherwise specified, stone masonry shall be scheduled in square metres stating the thickness.

14.3.2

Exterior work shall be scheduled separately from interior work.

14.3.3

Descriptions shall include details of:

- (a) Type, quality and general size of stones or slabs;
- (b) Texture and finish to exposed faces;
- (c) Composition and mix of mortar or details of other materials for bedding and jointing;
- (d) The general location and height to which work rises.

14.3.4

Circular work shall be scheduled separately stating if circular on one or both faces and the radius of the curve.

14.3.5

Work to floors and walls shall be scheduled separately.

14.3.6

Work to floors to falls or cross falls shall be so described.

14.3.7

Work to sides, soffits and tops of beams and to sides of columns shall be scheduled separately.

14.3.8

Pattern work shall be scheduled separately and, if of different types of stone, the area of each type shall be stated. The description shall include all necessary cutting to form the pattern.

14.3.9

Work to isolated surfaces not exceeding 1.0 m² shall be scheduled separately.

14.3.10

Work not exceeding 300 mm in width shall be scheduled in metres stating the width. This shall apply to all narrow widths except those in plane surfaces caused by openings and the like.

14.4 MEASUREMENT PROCEDURE

14.4.1

Deductions shall be made for sills, lintels and the like having a height of 80 mm and over, and for all openings and obstructions having an area of 0.2 m² and over.

14.4.2

Cutting and fitting around all openings and obstructions of less than 0.2 m² and cutting and fitting around pipes, standards, switches, plugs and the like shall be enumerated.

14.4.3

Forming of external and internal angles shall be measured separately in metres and the description shall include any special material or work involved.

14.4.4

Work to edges of stone shall be described and measured in metres.

14.4.5

Cornices, sills, skirtings, copings, treads, risers, grooves, flutings, running ornaments and the like shall be described and measured in metres. Mitres, angles, stop ends, and the like shall be enumerated.

14.4.6

Raking and circular cutting shall be measured in metres or included in the description of the work as appropriate.

14.4.7

Centring for openings shall be fully described and enumerated. Centring to be left in shall be measured separately.

14.4.8

Work to bench tops and the like shall be described and enumerated. The description shall include all surface finishes, edge work and fixings.

14.4.9

Letters, numerals, isolated enrichments and the like shall be described and enumerated.

14.4.10

Mortices, notchings and the like for fixings shall be enumerated.

14.4.11

Anchoring to structure and other fixings shall be described and enumerated.

14.4.12

Applied treatments shall be described and measured in square metres.

14.4.13

Damp-proof coursing shall be described and measured in metres.

14.4.14

Raking out of joints shall be measured in metres.

14.4.15

Pointing shall be described and measured in square metres.

14.4.16

Sealants, gaskets and special joint treatment shall be described and measured in metres.

14.4.17

Grouting to cavity between masonry and substrate shall be described and measured in square metres.

SECTION 15 – METALWORK

15.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

15.2 PREAMBLES

15.2.1

The tables used for calculating the mass of members shall be stated.

15.2.2 Rates to include

- (a) Supply, fabrication and delivery;
- (b) Fixing in position.

15.3 GENERAL PRINCIPLES

15.3.1

The description of each item shall include:

- (a) Type of metal;
- (b) Finish;
- (c) Mass, where applicable;
- (d) Fixings which are part of the item;
- (e) Protection by wrapping, coating, etc.

15.3.2

Detailed quantities shall be scheduled for composite fabricated items with specific reference to drawing detail numbers, and/or specification clause numbers. The description shall include the overall size and shape. Detailed quantities shall show:

- (a) Members either in metres or kilograms;
- (b) Welding either in metres or enumerated;
- (c) Fittings, drillings, fixings and the like enumerated;
- (d) Other labours.

15.3.3

Sizes of members, where scheduled, shall be nominal only.

15.3.4

Where members are moulded over a core, timber or otherwise, the item shall include the core.

15.3.5

Work requiring assembly on site, where so detailed, other than bolting together, shall be so described with the site labours defined.

15.3.6

Standard components may be described by the product name and catalogue number.

15.4 MEASUREMENT PROCEDURE

15.4.1

Core rails, handrails, fascias, mouldings and the like shall be measured in metres.

15.4.2

Special finishes to ends, joints, changes in direction, drillings, bolts, special fittings and the like shall be enumerated.

15.4.3

Castings, forgings, sunshields, tubular supports, partitions, newels, balusters, bolts, rods, straps, bars, brackets, gratings, guard bars, mat frames, balustrading (where made as a unit), gates, grilles and the like shall be enumerated and described.

15.4.4

Sheathing, lining, panelling, flat plate and chequer plate shall be measured in square metres. The description shall include provision for all laps. Deductions shall be made for all openings having an area of 0.5 m² and over.

Edges, angles, joints, stop ends, finishing members and the like shall be measured in metres.

15.4.5

Raking and circular cutting to sheathings and the like shall be measured in metres.

15.4.6

Where shop drawings and the like are required, an appropriate item shall be scheduled.

SECTION 16 – METAL WINDOWS AND DOORS

16.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

16.2 PREAMBLES

16.2.1 Rates to include

Sealants, gaskets, draught strips and the like not specifically mentioned in this section.

16.3 GENERAL PRINCIPLES

16.3.1

Particulars shall be scheduled of the material and finish required, the material to which fixed, together with hinge systems and types.

16.3.2

Curtain walling, patent glazing, metal windows, doors and glazing shall be scheduled separately in this section. Metal frames not using proprietary sections may be scheduled in section 15.

16.4 MEASUREMENT PROCEDURE

16.4.1

Each type of window shall be enumerated separately stating the overall size and reference made to the appropriate drawings. Reveal linings shall be included in the description of the window where appropriate.

16.4.2

Curtain walling, patent glazing, shop fronts and the like shall be scheduled giving the quantities of the principal component parts.

16.4.3

Doors shall be enumerated with the frames stating the size and construction.

16.4.4

Structural mullions and special connecting members shall be measured separately.

16.4.5

Associated flashings shall be measured in this section in accordance with section 23.

16.4.6

Where shop drawings and the like are required, an appropriate item shall be scheduled.

16.4.7

Sealants, gaskets and the like between metal sections and the structure shall be measured in metres stating the type, grade and sectional size.

16.4.8

Hardware shall be measured in this section in accordance with 17.4.12.

16.4.9

Glazing shall be measured separately in this section in accordance with section 36, except that domestic type windows may include the glazing if appropriate.

SECTION 17 – CARPENTRY

17.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

17.2 PREAMBLES

17.2.1 Rates to include

- (a) Fixing in position complete with all nails or staples;
- (b) Cutting, notching, mortising, tenoning and wedging, checking, sinking, birdsmoothing, rebating and arris rounding and the like;
- (c) Waste, machining, tongues, grooves, laps and the like and running to detailed profile;
- (d) Mitres, scribes, returned ends, and the like, except in the case of handrailing and timber boarding;
- (e) Fitting, cutting, boring, mortising and the like for hardware and fixing complete.

17.3 GENERAL PRINCIPLES

17.3.1

The description of New Zealand building timbers shall be in accordance with grade classifications specified in NZS 3631. Imported timbers shall be described in accordance with the usual local trade practice, or as specified. The timber shall be scheduled separately for each species, grade and sectional size and further separated in accordance with its physical position in the structure. Moulded, sanded, hand finished or specially worked timbers shall be scheduled separately.

Timber treatments shall be included with the description.

17.3.2

The original green rough-sawn call size of all timber classified and graded under NZS 3631 shall be the basis of measurement and size description. Where it is necessary to give finished sizes both dimensions shall be scheduled finished to avoid mixing of call and finished dimensions. Except as otherwise specified in this section, all timbers shall be scheduled in metres.

17.3.3

Deductions shall be made for all openings in sheathings, linings and the like of 1.0 m² and over.

17.4 MEASUREMENT PROCEDURE

17.4.1 Dampcourse

Damp-proof coursing and the like shall be measured in metres and the approximate width stated. Damp-proof coursing to isolated piles and piers shall be enumerated.

17.4.2 Framing

17.4.2.1

Framing timbers shall be measured in metres according to their function.

17.4.2.2

Gauged or dressed framing shall be measured separately.

17.4.2.3

Timbers shall be measured separately for each 300 mm of length in excess of 6.0 m.

17.4.2.4

The description shall state whether passings are measured or not.

17.4.2.5

Herringbone strutting shall be measured as the actual length of timber fixed in place.

17.4.3 Fixings

17.4.3.1

Work fixed with screws, plugs, screws and cups or adhesive shall be appropriately described and measured separately.

17.4.3.2

Bolts, explosive driven pins, timber connectors, proprietary fixings and the like shall be enumerated.

17.4.3.3

Unless included elsewhere, the boring of holes for bolts, sinking of heads, pelleting and the like shall be enumerated.

17.4.4 Trusses

17.4.4.1

Timbers in roof principals, trusses, and the like shall be measured separately.

17.4.4.2

Proprietary trusses shall be enumerated, giving size and height for erection.

17.4.4.3

Metalwork and fixings shall be enumerated.

17.4.5 Paper and insulation

17.4.5.1

Building papers, wire netting, insulation blankets, quilts and the like shall be described and measured in square metres of surface area covered. The lap and fixings shall be stated.

17.4.5.2

Insulation batts, loose fill and the like shall be described and measured in square metres over the framing.

17.4.6 Battens

Furring or battening to floors, walls, ceilings and the like shall be measured separately in metres.

17.4.7 Flooring and linings**17.4.7.1**

Flooring, sarking, matchlining, and the like shall be measured separately in square metres of surface area covered.

17.4.7.2

Special flooring, linings, and the like, laid to patterns, shall be measured separately.

17.4.7.3

Diagonal boarding shall be measured separately. An item shall be measured for perimeter cutting.

17.4.7.4

Boarding shall be measured in square metres of surface area covered. The description shall state the direction of lay, lap, or rebate where shown, and fair ends or edges.

17.4.7.5

Mitred angles and internal scribed angles shall be measured in metres.

17.4.7.6

Sheathings, linings and sheet foam polystyrene and the like shall be measured in square metres of surface area covered. Special reference shall be made where it is necessary for linings to be set out symmetrically to pattern or grain. Jointing systems shall be described.

17.4.7.7

Sheathings and linings to beams, columns, dados and the like shall be measured separately.

17.4.7.8

Special pre-formed polystyrene and the like columns, column heads, ornamental shapes etc. shall be measured separately. Shapes formed on-site by carving, cutting, rasping etc. shall be measured as extra value.

17.4.7.9

Work not exceeding 300 mm in width shall be measured in metres as extra value. This shall apply to all narrow widths except those in plane surfaces caused by openings and the like.

17.4.7.10

Raking and circular cutting to flooring, sarking, matchlining, boarding, sheathing and linings shall be measured in metres.

17.4.7.11

Forming recesses for light fittings and the like shall be enumerated.

17.4.7.12

Sanding to floors and the like shall be measured in square metres. Small areas shall be described and measured separately.

17.4.8 Finishings

17.4.8.1

Borders, cover battens, cornices, mouldings and the like shall be measured in metres. Grilles, vents, rosettes, and similar ornaments shall be enumerated.

17.4.8.2

Fascias, stops, facings, barge boards, cappings, architraves, skirtings, aprons, rails, sill boards, mouldings and the like shall be measured in metres.

17.4.8.3

Skirtings, chair rails, picture rails and the like to isolated columns and piers shall be measured separately.

17.4.8.4

Turning, shaping, and moulding of posts, beams and the like shall be enumerated.

17.4.9 Proprietary toilet screens

17.4.9.1

Proprietary or specifically designed screens for toilets, showers, etc., shall be described in accordance with the manufacturer's catalogue and/or as defined by the drawings and specifications.

17.4.9.2

Screens shall be described and enumerated separately for each size. The description shall include dimensions, fixings and all necessary components.

17.4.9.3

Doors shall be enumerated separately for each size. The description shall include dimensions, hinges, and hardware.

17.4.9.4

Head rails and supports shall be described and measured in metres.

17.4.9.5

Support posts and feet shall be described and enumerated.

17.4.9.6

Panels forming ducts shall be described and enumerated separately for each size. The description shall include dimensions, fixings and all necessary components.

17.4.10 Computer floors

Proprietary or specifically designed computer floors shall be described in accordance with the manufacturer's catalogue and/or as defined by the drawings and specifications and scheduled appropriately.

17.4.11 Sealants**17.4.11.1**

Joint sealing compound shall be measured in metres, stating the type, grade, sectional size and backing material if required. Primers for sealants and masking shall be deemed to be included.

17.4.11.2

Compressible sealing strips shall be measured in metres for each uncompressed size.

17.4.12 Hardware

All hardware shall be enumerated as follows:

- (a) Hardware fixed to walls, floors, timber, metal, glass or other material shall be measured separately and so described;
- (b) Bolts, explosive fastenings and other metal anchors, fastenings and the like required for fixing hardware shall be included in the description of the item concerned;
- (c) The finish required to hardware shall be described;
- (d) The fixing of fanlight and window sash geared openers shall be described and the lengths of cable or conduit, height above floor of operating gear, and of sash bottom rails shall be stated;
- (e) Where monetary sums or rates are measured for the supply only of hardware the various types of fittings to be fixed shall be separately enumerated;
- (f) Where construction keying, masterkeying or keying alike of locks is required this shall be stated in a separate item;
- (g) Removal of hardware for painting or the like shall be stated.

SECTION 18 – LAMINATED TIMBER

18.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

18.2 PREAMBLES

18.2.1 Rates to include

- (a) Manufacture and delivery;
- (b) Hoisting and fixing in position complete with all nails;
- (c) Fitting, cutting, boring, morticing and the like;
- (d) Protection.

18.3 GENERAL PRINCIPLES

18.3.1

Laminated building timbers shall be described in accordance with NZS 3606. Imported timbers shall be described in accordance with the usual local trade practice, or as specified. Moulded, sanded, hand finished or specially worked timbers shall be scheduled separately. Timber treatments prior to erection shall be included with the description, and shall be described in accordance with NZMP 3640 where appropriate and treatments after erection shall be scheduled in accordance with section 35.

18.3.2

Where specified, type of adhesive and laminate sizes shall be stated.

18.3.3

Finished sizes shall be scheduled.

18.3.4

Laminated timber work shall be described according to its function and size. Details including surface finishes, cambering, specified protection and the like done at the time of fabrication, and height for erection, shall be included in the item.

18.3.5

Taking delivery, hoisting, setting and fixing in position may be measured separately and the method of scheduling this item shall be clearly stated. Fixing shall be described and classified according to position in the structure. The size and approximate mass shall be stated.

18.4 MEASUREMENT PROCEDURE

18.4.1

Portal frames, beams, individual structural members, stair treads and the like shall be enumerated.

18.4.2

Continuous members may be measured in metres and the description shall state the number of members and range of lengths.

18.4.3

Floors and the like shall be measured in square metres.

18.4.4

Metalwork and fixings shall be measured in accordance with section 15.

18.4.5

A separate item shall be measured for inspection and testing as required.

SECTION 19 – JOINERY

19.1 OVERVIEW

19.1.1

Refer to section 0, General rules, which shall be read in conjunction with this section.

19.1.2

The term Joinery used in this Standard Method of Measurement shall mean all items such as doors, windows, frames, cupboards, staircases and the like, normally constructed in joinery factories. The description shall include taking delivery and fixing of joinery.

19.2 PREAMBLES

19.2.1 Rates to include

- (a) Nails, screws, glue, dowels, and other fixings normally required in the manufacture;
- (b) Cutting, notching, mortising, tenoning and wedging, checking, sinking, rebating and arris rounding and the like;
- (c) Site measuring size of openings, spaces etc., to receive joinery;
- (d) Devices for fixing joinery in place to the backgrounds described. Where detailed, bolts and the like shall be enumerated.

19.3 GENERAL PRINCIPLES

19.3.1

Detailed quantities shall be given for each item of joinery, with similar items grouped together. Specific reference to drawing detail numbers and/or specification clause numbers shall be given. The species, grade and sectional size of members shall be given.

19.3.2

Hinges, integral metalwork and the like shall be included in the detailed quantities.

19.3.3

All sizes shall be deemed to be call sizes unless stated as finished sizes. Where it is necessary to give finished sizes, both dimensions shall be scheduled finished to avoid mixing of call and finished dimensions.

19.3.4

Fixing of joinery shall state material fixed to.

19.4 MEASUREMENT PROCEDURE

19.4.1 Windows

19.4.1.1

The description of windows, borrowed lights and combined frames shall include the number of lights or divisions or both, the number of sashes and the method of hanging sashes.

19.4.1.2

Detailed quantities shall be measured stating components as follows:

- (a) Sills, heads, jambs, mullions, transoms, sash members, glazing beads and the like in metres. Alternatively sashes may be described and enumerated separately;
- (b) Solid panels and the like in square metres, giving thickness.

19.4.2 Doors

19.4.2.1

Doors shall be enumerated and measured separately for each finished size, thickness, grade, and quality. Clashing strips, beads, mouldings, rebates, glazed openings, glazing beads and the like shall be included in the description.

19.4.2.2

Doors of framed or special construction shall be measured separately. The sectional sizes of stiles, rails, muntins, panels and the like shall be stated.

19.4.2.3

Door frames shall be enumerated for each size.

19.4.3 Stairs

19.4.3.1

The description of staircases and steps shall state the width, rise and going, together with the number of treads and risers and details of any winders.

19.4.3.2

Detailed quantities shall be measured stating components as follows:

- (a) Strings, carriages, treads, risers and nosings and the like in metres. Winders shall be measured separately;
- (b) Ramped strings to winders shall be enumerated;
- (c) Newels shall be enumerated;
- (d) Handrails in metres. Changes in direction and level shall be enumerated and described according to type as extra value over straight handrails. Special finishes to end shall be enumerated;
- (e) Balusters in metres stating the number of balusters.

19.4.4 Fittings

19.4.4.1

The description of cupboards, benches, counter fittings and the like shall state the overall size and type of fittings with general details of number of doors, drawers, bins, shelving etc.

19.4.4.2

Detailed quantities shall be measured stating components as follows:

- (a) Bearers, toeboards, framing and the like in metres;
- (b) Carcase, divisions and shelving in square metres, or metres with the widths stated;
- (c) Clashing or edging strips in metres;
- (d) Doors, bins, drawers, including any special runners, and the like enumerated;
- (e) Special coverings and finishings shall be measured separately.

19.4.5 Panel-work

19.4.5.1

Framed panel-work and the like shall be measured in accordance with the principles of section 17.

19.4.5.2

Circular, spandrel, or specially shaped framed panelling shall be measured separately.

19.4.5.3

Interior and exterior angles to framed panelling shall be measured in metres and the number stated.

19.4.6 Veneers

Melamine veneered pressings and the like, such as bench tops, shall be enumerated giving the size, details of substrate and edge treatment including upstands, openings and sinks bonded in.

19.4.7 Other joinery

Other joinery items not expressly included shall be measured and described in accordance with principles of this section.

SECTION 20 – PROPRIETARY PARTITIONS

20.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

20.2 PREAMBLES

20.2.1

Particulars shall be given of performance qualities required (e.g., Sound Rating, Fire Rating, Impact Testing, Loads etc).

20.3 GENERAL PRINCIPLES

20.3.1

This section covers proprietary metal framed, flush finish or demountable partitions and office screens.

20.3.2

All work normally carried out or arranged by proprietary partition firms shall be included in this section of the schedule.

20.3.3

Partitions shall be described in accordance with the manufacturer's catalogue and/or as defined by the drawings and specifications.

20.3.4

Each type of partition shall be scheduled separately under a heading which gives the general description, height, thickness and any performance specifications to be met.

20.3.5

The description shall state whether flush stopped finish or demountable.

20.3.6

Curved walls shall be scheduled separately.

20.4 MEASUREMENT PROCEDURE

20.4.1

Partitions shall be measured in metres.

20.4.2

The following shall be described and enumerated as extra value:

- (a) Wall starters;
- (b) Intersections and corners;
- (c) Fair ends;
- (d) Doors and door frames;
- (e) Isolated borrowed lights.

20.4.3

Hardware shall be scheduled in accordance with clause 17.4.12.

20.4.4

Window infills shall be described and enumerated.

20.4.5

Ceiling baffles shall be described and measured in metres.

20.4.6 Office screens

20.4.6.1

Movable or fixed free standing screens shall be described in accordance with the manufacturers catalogue and/or as defined by the drawings and specifications.

20.4.6.2

Screens shall be enumerated and measured separately for each size, thickness, grade, quality and finish. The description shall include all necessary fixings and components.

SECTION 21 – INSULATING PANEL SYSTEMS

21.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

21.2 PREAMBLES

21.2.1

Particulars shall be given of:

- (a) Any special rating of the core, density and special finish, colour required to the cladding or skin material;
- (b) Any special requirement relating to inclusion of services, pipes and wiring into panels.

21.2.2 Rates to include

- (a) Running joints as required to suit transport, handling, stock widths and lengths, associated extrusions, components, fixings, vapour seals, sealants as required to complete the joint;
- (b) Bolts and miscellaneous support fixings;
- (c) Support systems and hangers and hangers for ceiling panels unless scheduled elsewhere;
- (d) All necessary junctions between metal extrusions.

21.3 GENERAL PRINCIPLES

21.3.1

This section covers the panelled wall and ceiling/roof systems which normally comprise an expanded polystyrene or similar core sandwiched between factory bonded skins of prefinished aluminium or steel sheet cladding. Floor insulation may comprise panels as above or polystyrene panel only with no skin/cladding (below concrete topping).

21.3.2

Panels shall be described according to their type, thickness and physical position in the structure. Types of joints between panels shall be described. Wall heights and heights of ceiling/roof panels above the base slab shall be stated.

21.4 MEASUREMENT PROCEDURE

- 21.4.1** Panels shall be measured in square metres of surface.
- 21.4.2** Deductions shall be made for all openings which are the full width of a standard panel.
- 21.4.3** Non-deducted openings shall be enumerated.
- 21.4.4** All connections between panels other than running joints are to be measured as junctions or corners.
- 21.4.5** Junctions and corners of panels shall be described and measured in metres.
- 21.4.6** Fair ends to panels shall be measured in metres.
- 21.4.7** Cutting back to panel ends shall be measured in metres.
- 21.4.8** Raking cutting shall be measured in metres.
- 21.4.9** Starter channels, angles etc., shall be described and measured in metres.
- 21.4.10** Flashings and sealants other than to running joints shall be measured in metres.
- 21.4.11** Doors shall be enumerated and described to include all hardware, gaskets, sealing and reveals.
- 21.4.12** Penetrations and sealing of panels for structural members, ducts, pipes, wires and the like shall be enumerated.

SECTION 22 – ROOFING

22.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

22.2 PREAMBLES

22.2.1

Particulars shall be given of:

- (a) Roofing materials to be used;
- (b) Side and end laps and treatment of same;
- (c) Method and spacing of fixings;
- (d) Nature of structural supports;
- (e) Special pre-finished or applied treatment.

22.2.2 Rates to include

Laps and fixings.

22.3 GENERAL PRINCIPLES

22.3.1

The principles for the measurement of roofing shall apply equally in the measurement of similar coverings to walls.

22.3.2

Work shall be grouped according to the kind of material involved and each group shall be scheduled under an appropriate heading.

22.3.3

The pitch of the roof and the height of eaves above normal ground level shall be stated.

22.3.4

The description of flashings, gutters and the like fabricated from sheet metal shall include the material, thickness, width before bending or size, details of bending and other labours, jointing, fixing, location and specific reference to detail drawing number.

22.4 MEASUREMENT PROCEDURE

22.4.1 Battens

Battens, stating grade and sectional size, shall be included in the description.

22.4.2 Netting and paper

Wire netting, building paper and the like shall be measured separately in square metres of surface area covered and the lap and fixings shall be stated.

22.4.3 Roofing

22.4.3.1

Roofing shall be measured in square metres of surface area, including the extra material in turn-ups, turn-downs and the like. Small or isolated areas shall be measured separately.

22.4.3.2

Corrugated and trough roofing in excess of 15 m in length shall be measured separately.

22.4.3.3

Specially formed sheets shall be measured as extra value.

22.4.3.4

Work to curved, conical and spherical roofs shall be so described stating the radius or diameter.

22.4.3.5

Translucent sheets within other types of roofing shall be measured in square metres of daylight opening and the number of openings shall be stated.

22.4.3.6

The description of sheet roofing shall include the forming of rolls, seams, laps, ribs and joints.

22.4.3.7

Deductions shall be made for all openings and the like having an area of 2.0 m² and over. Deductions shall be made for all translucent sheeting.

22.4.3.8

Non-deducted openings shall be enumerated.

22.4.3.9

Raking cutting and cutting to both sides of hips and valleys and circular cutting shall be measured in metres.

22.4.3.10

Upstands, turn-ups, turn-downs, folding, capping, stopping ribs or seams and the like shall be measured in metres as extra value.

22.4.3.11

Covers and timber formers to rolls shall be measured separately in metres. Extra work to ends of rolls and standing seams shall be enumerated.

22.4.3.12

Turning into chases, beads, fillets, and the like shall be measured in metres as extra value.

22.4.4 Accessories**22.4.4.1**

Ridges, hips, valleys and the like shall be described and measured in metres. The description shall include the type e.g., notched, capped and the like.

22.4.4.2

Ridge stop ends, caps, hip starters, and the like shall be enumerated.

22.4.4.3

Flashings shall be measured in metres stating whether notched over roofing ribs or dressed into corrugations, etc., and the method of fixing; stepped work shall be measured separately.

22.4.4.4

Flashings to flues, vents and the like shall be enumerated.

22.4.4.5

Cutting and/or sealing of flashing chases shall be described and measured in metres.

22.4.4.6

Angles, mitres, stop ends, expansion joints, sumps, outlets, overflows and the like shall be enumerated.

22.4.4.7

Wire balloons, gratings and the like shall be enumerated. Vermin proofing, gutter guards and the like shall be measured in metres.

22.4.4.8

Work about gutter and downpipe openings, pipes and the like through the roof shall be enumerated.

22.4.4.9

Work to dormers and the like shall be so described.

22.4.5 Skylights**22.4.5.1**

Skylights shall be enumerated and it shall be stated whether the roofing has been deducted. Flashings to skylights shall be described and included in the description with the forming of the opening in the roof.

22.4.5.2

Glazing to skylights shall be measured separately in accordance with section 36.

22.4.6 Ventilators

Roof ventilators shall be enumerated. The type of base and the size of the ventilator shall be stated.

22.4.7 Gutters and downpipes

Gutters, spouting, downpipes and the like where not an integral part of the roofing shall be measured in accordance with section 23.

22.4.8 Membrane roofing

22.4.8.1

Gutters, valleys, and the like to membrane roofing, when forming part of general roofing, shall be measured in metres as extra value.

22.4.8.2

Flashings, aprons, gutters, valleys and the like not forming an integral part of the roof shall each be measured separately in metres stating the girth.

SECTION 23 – PLUMBING AND GAS FITTING

23.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

23.2 PREAMBLES

23.2.1 Rates to include

- (a) Laps, joints, welted edges and short lengths to flashings and rainwater goods;
- (b) Running joints, short lengths and straight non-reducing connections to pipework;
- (c) All bends, elbows, tees and the like to pipework less than 25 mm nominal bore;
- (d) All insulation to bends, elbows, tees, valves and the like on pipework less than 25 mm bore;
- (e) Joints of taps, valves and traps to pipework and fittings;
- (f) Standard pipe fittings, clips, saddles, brackets, hangers and the like;
- (g) Forming holes other than holes through concrete, concrete masonry, brickwork and steel.

23.3 GENERAL PRINCIPLES

23.3.1

The description of flashings, gutters and the like fabricated from sheet metal shall include the material, thickness, width before bending or size, details of bending and other labours, jointing, fixing, location and specific reference to detail drawing number.

23.3.2

The description for pipework shall include the type or method of pipework support.

23.3.3

Pipework for each plumbing service shall be scheduled separately.

23.3.4

Excavation for pipework shall be scheduled in accordance with section 24 where appropriate.

23.4 MEASUREMENT PROCEDURE

23.4.1 Pipework

23.4.1.1

Each size and specification of pipe shall be measured separately in metres, stating nominal bore and thickness or mass as required. The description shall include the type of material and method of jointing and the general background material to which the pipe is fixed.

23.4.1.2

Bends, elbows, tees, and the like to pipework of 25 mm nominal bore and over shall be enumerated as extra value.

23.4.1.3

Connections between pipes of dissimilar materials shall be enumerated.

23.4.1.4

Connections to existing services shall be enumerated. Meters, tobies, and the like shall be enumerated.

23.4.1.5

Insulation and protection to pipework shall be described and measured separately in metres for each type and size of pipe.

23.4.1.6

Insulation to bends, elbows, junctions, valves and the like shall be enumerated as extra value for pipework 25 mm nominal bore and over.

23.4.1.7

Flush pipes and sparge pipes shall be enumerated.

23.4.1.8

Painting and pipe identification shall be scheduled in accordance with section 35.

23.4.1.9

Identification of pipework, valves and equipment shall be itemised.

23.4.2 Tanks and cylinders

23.4.2.1

Tanks shall be enumerated. The description shall include capacity and dimensions, tappings, connections, cover, method of fixing, ballvalve, and silencing pipe.

23.4.2.2

Cylinders, calorifiers, and the like shall be enumerated, and the description shall include the type, make, capacity, connections, casing and lagging. Elements, thermostats and the like, where required, shall be enumerated, and the description shall include the capacity and make.

23.4.2.3

Trays shall be enumerated.

23.4.2.4

Overflows and expansion vents shall be measured as for pipework.

23.4.3 Taps

Taps, cocks, valves, mixing chambers, shower roses, and the like shall be enumerated.

23.4.4 Traps

Traps, floor wastes and overflows shall be enumerated and measured separately for each size and type.

23.4.5 Fittings**23.4.5.1**

Sanitary fixtures, fittings, appliances and the like shall be enumerated. Ancillary items for sanitary fittings such as waste outlets, plugs, chains, stays, brackets, and the like shall be included in the description.

23.4.5.2

Metal bench tops shall be enumerated.

23.4.5.3

Boilers, ranges, and the like shall be enumerated. The description shall include the type, make, seatings, fixings and connections.

23.4.5.4

Fire fighting appliances, washing machines, dish washers, waste disposal units, and the like shall be enumerated.

23.4.6 Gutters and downpipes**23.4.6.1**

Gutters and spouting shall be measured in metres. Angles, mitres, stop ends, expansion joints, sumps, rainwater heads, outlets, overflows and the like shall be enumerated.

23.4.6.2

Downpipes shall be measured in metres. Offsets, angles, mitres, and the like shall be enumerated. Jointing to drains shall be enumerated.

23.4.7 Flashings etc.**23.4.7.1**

Flashings, shall be measured in metres stating the number of times bent, whether notched over roofing ribs or dressed into corrugations etc. and the method of fixing; stepped work shall be measured separately.

23.4.7.2

Cutting and/or sealing of flashing chases shall be described and measured in metres.

23.4.8 Skylights**23.4.8.1**

Sheet metal skylights shall be enumerated.

23.4.8.2

Glazing to skylights shall be measured in accordance with section 36.

23.4.9 Flues

23.4.9.1

Metal flues and the like shall be measured in metres. Soot doors, changes of direction, and the like shall be enumerated as extra value. Cowls shall be enumerated.

23.4.9.2

Flashings to flues, vents, and the like shall be enumerated.

23.4.9.3

Wire balloons, gratings, and the like shall be enumerated. Vermin proofing gutter guards and the like shall be measured in metres.

23.4.10 Sundries

23.4.10.1

The provision of sleeves for building in or the drilling of holes into the building structure shall be enumerated.

23.4.10.2

The making good, packing, sealing or fire rating of building penetrations shall be enumerated.

23.4.10.3

Electrically operated valves, sensors etc. and heat tracing to pipes is to be enumerated and described. The wiring connections and controls are to be measured in section 28.

23.4.11 General

23.4.11.1

An item shall be scheduled for obtaining all necessary approvals.

23.4.11.2

An item shall be scheduled for as-built drawings.

23.4.11.3

An item shall be scheduled for testing.

SECTION 24 – DRAINAGE

24.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

24.2 PREAMBLES

24.2.1 Rates to include

- (a) Rates for trenching shall include excavation, backfilling, consolidation, carting away surplus material, maintaining and supporting sides of trenches, grading bottoms and keeping free from water;
- (b) Rates for pipework shall include jointwork and cutting of pipes.

24.3 GENERAL PRINCIPLES

24.3.1

Trenches shall be scheduled in metres.

24.3.2

Each size and quality of pipe shall be scheduled separately in metres. The description shall include the type of material and method of jointing.

24.3.3

Foul drains shall be scheduled separately from stormwater drains.

24.4 MEASUREMENT PROCEDURE

24.4.1

Trench excavation for foul and stormwater drains shall be measured separately.

24.4.2

Trench excavation shall be measured stating the depth as 0-1.5 m, 0-3.0 m, 0-4.5 m and so on in increments of 1.5 m and the average depth shall be stated. Backfill to excavations with hardfill or imported material shall be measured as extra value.

24.4.3

Rock excavation shall be measured in cubic metres as an extra value in accordance with the trench widths as determined by pipe diameter plus 300 mm or the following table whichever is the greater.

Size of pipe	Trench width (m)		
	Up to 1.0 m in depth	1.0 m to 1.5 m in depth	Over 1.5 m in depth
Up to 150 mm	0.6	0.8	1.0
250 mm	0.8	1.0	1.1
300 mm and over	1.0	1.1	1.2

24.4.4

Opening of roads, footpaths, and the like shall be measured as extra value. Making good if required shall be measured and described separately.

- 24.4.5**
Pipework including bedding and haunching shall be measured in stages of 1.5 m in depth. Vertical pipework shall be measured separately.
- 24.4.6**
Connections to existing sewers and drains shall be enumerated. The description shall include the depth and all necessary excavation and size and type of connections.
- 24.4.7**
Connections to plumbing, soil, waste pipes and the like shall be enumerated.
- 24.4.8**
Junctions, bends, inspection bends, inspection pipes, and the like shall be enumerated as extra value over ordinary pipework.
- 24.4.9**
Gully traps, Buchan traps, grease traps, yard sumps, and the like shall be enumerated. Excavation, concrete surrounds, gratings and connections to drains, where required, shall be included in the description of the item.
- 24.4.10**
Covers and surrounds to drains shall be measured in metres. Reinforcement shall be measured by mass in accordance with section 9.
- 24.4.11**
Manholes, inspection chambers, septic tanks, cesspits, and the like shall be enumerated giving internal size and depth to invert.

The description shall include excavation, pipes, channels and the like. Detailed quantities shall be measured where the above are of an unusual construction or size.
- 24.4.12**
Sump pumps, macerator pumps and the like shall be enumerated. The description shall include details of ratings, switching, floats etc. and for supports and lifting requirements. Wiring connections and controls are to be measured in section 28.
- 24.4.13 General**
- 24.4.13.1**
An item shall be scheduled for obtaining all necessary approvals.
- 24.4.13.2**
An item shall be scheduled for as-built drawings.
- 24.4.13.3**
An item shall be scheduled for testing.

SECTION 25 – MECHANICAL SERVICES

25.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

25.2 PREAMBLES

25.2.1 Rates to include

- (a) Running joints, short lengths and straight non-reducing connections to pipework;
- (b) All bends, elbows, tees and the like to pipework less than 25 mm nominal bore;
- (c) All insulation to bends, elbows, tees, valves and the like on pipework less than 25 mm bore;
- (d) Jointing of taps, valves and the like to pipework and fittings;
- (e) Standard pipe fittings, clips, saddles, brackets, hangers and the like;
- (f) Fixing, hangers and supports to all ductwork and duct components;
- (g) Forming holes other than holes through concrete, concrete masonry, brickwork and steel.

25.3 GENERAL PRINCIPLES

25.3.1

The work shall be scheduled under the following general classifications:

- (a) Plant and equipment items;
- (b) Pipework;
- (c) Ductwork;
- (d) Thermal insulation;
- (e) Automatic controls;
- (f) Electrical work;
- (g) Painting;
- (h) Sundries;
- (j) Such additional classifications for special services etc. as are appropriate;
- (k) General.

25.3.2

Within the above general classifications, items shall be grouped by systems (for example supply/return/extract ductwork, chilled water/heating/gas pipework) and quantities shall be separated for varying locations (plantrooms, floor levels, shafts and the like).

25.4 MEASUREMENT PROCEDURE

25.4.1 Plant and equipment

25.4.1.1

Equipment (for example boilers, chillers, air handlers, fans, pumps) shall be enumerated. Where equipment designations apply these shall be included in the description (e.g., pump P2, fan F3 etc).

25.4.1.2

Special requirements such as inertia bases, anti-vibration provisions and the like shall be enumerated. Seismic restraints where not specifically included in the description shall be enumerated.

25.4.1.3

Where specified to be supplied with the equipment, the following may be enumerated: motor starters, local isolators, control panels, power factor correction, thermal protection devices, and the like.

It is preferable, however, that they are measured under 25.4.6 or section 28.

25.4.1.4

Radiators, convector units, fan coil units, duct reheating coils, mixing boxes and the like shall be described and enumerated.

25.4.1.5

Continuous runs of convectors and the like shall be measured in metres giving elements and casings separately. Angles, junctions, stop ends, access panels and the like shall be enumerated.

25.4.1.6

Tanks shall be measured in accordance with section 23.

25.4.2 Pipework

25.4.2.1

Each size and specification of pipe shall be measured separately in metres, stating the nominal bore, thickness or mass as required.

25.4.2.2

The description shall include the type of material and method of jointing and the general background material to which the pipe is fixed.

25.4.2.3

Bends, elbows, tees and the like to pipework of 25 mm nominal bore and over shall be enumerated as extra value.

25.4.2.4

Hangers, supports, clips and other pipe fixings shall be included in the description. Guides, anchors, rollers, seismic restraints, anti-vibration supports and the like where drawn or specified shall be measured separately.

25.4.2.5

Line mounted items such as valves, traps, strainers, expansion bellows, gauges, thermometers and the like together with the necessary mating flanges, gaskets and bolts or unions, pockets and the like shall be enumerated for each type of pipework.

25.4.2.6

The fixing only of line mounted automatic controls shall be enumerated. The item shall be deemed to include the supply of reducers together with the necessary mating flanges, gaskets and bolts or unions.

25.4.2.7

Connections to equipment, existing services and the like shall be enumerated.

25.4.2.8

Excavation for pipework shall be measured as described in section 24 and the diameter of pipework including insulation shall be stated.

25.4.3 Ductwork

25.4.3.1

Rectangular ductwork shall be measured in square metres of surface area for each combination of duct classification (for example low pressure, high velocity, medium pressure), material and internal lining. Different duct wall thicknesses within a particular classification shall be disregarded unless specified to exceed normal wall thicknesses for that class (for example heavier gauge for exterior ductwork).

25.4.3.2

Internally lined ductwork shall be measured including any internal insulation and/or lining.

25.4.3.3

The surface area shall be based on duct air stream sizes, calculated in accordance with Appendix A.

25.4.3.4

Bends, tees, transitions and the like shall be measured in square metres as one item for each duct classification, separately from straight ductwork

25.4.3.5

Plenum boxes to diffusers and the like shall be enumerated. The description shall include type, internal lining, and the like stating the internal size and connection sizes.

25.4.3.6

Oval, circular or flexible ductwork shall be measured in metres for each combination of duct class, size, material and internal lining.

25.4.3.7

Bends, tees, transitions, reducers and the like to oval or circular ductwork shall be enumerated.

25.4.3.8

Duct mounted items such as dampers, fire dampers, clean-out doors, access panels and the like shall be enumerated.

25.4.3.9

Turning vanes shall be enumerated for each type by diagonal sectional area of the duct.

25.4.3.10

Grilles and diffusers shall be enumerated according to type, face size if detailed, and duct connection size.

25.4.3.11

Continuous grilles and diffusers shall be measured in metres. Stop ends and changes in direction shall be enumerated as extra value.

25.4.3.12

Flexible connections in ductwork, connections to equipment, connections of ducts of different materials and connections to building openings shall be enumerated.

25.4.3.13

The fixing only of duct mounted automatic controls, gauges and the like shall be enumerated. The item shall include the supply of fixings.

25.4.4 Insulation

25.4.4.1

Insulation to pipework shall be described and measured in metres for each type and size of pipe.

25.4.4.2

Coneing down to valves and fittings shall be included in the description.

25.4.4.3

Insulation to bends, elbows, tees, valves, and the like shall be enumerated as extra value for pipework 25 mm nominal bore and over.

25.4.4.4

External insulation to ductwork shall be measured in square metres of air stream surface area calculated in accordance with Appendix A, separately for each type and thickness.

25.4.4.5

Insulation to equipment shall be enumerated.

25.4.4.6

Insulation to cool rooms, plenums and the like shall be measured in square metres of surface area to be insulated stating type of insulation and surface being fixed to. Insulation to curved surfaces and the like shall be measured as extra value.

25.4.4.7

The description of each item shall include cladding or proprietary surface finishes where applicable.

25.4.5 Controls

25.4.5.1

Where fully detailed in the specifications and drawings the supply and installation of all control components, control panels and the like shall be described and enumerated. Automatic control systems shall be enumerated. Reference shall be made to relevant specification clauses and drawings.

25.4.5.2

The supply only of automatic controls for installation by others (control valves, damper motors, and the like) shall be enumerated separately.

25.4.5.3

The supply and installation of room thermostats, sensors and the like shall be enumerated.

25.4.5.4

Control circuits shall be enumerated according to the number of sensors and terminations to control valves, diffusers and the like.

25.4.5.5

Supply and installation of compressors and associated equipment shall be enumerated.

25.4.5.6

Supply and installation of compressed air mains and sub-mains shall be measured in this section as for "Pipework".

25.4.6 Electrical

25.4.6.1

The principles of section 28, Electrical services, will apply to this section except as herein stated.

25.4.6.2

Switchboards and distribution boards shall be described and enumerated. Reference shall be made to relevant drawings and specification clauses. The position of and the method of fixing such boards shall be stated.

25.4.6.3

Power and control circuits shall be grouped according to switchboard origin and enumerated stating the cable size or equipment rating as applicable.

25.4.6.4

The description of switchboards, circuits and the like shall state any items of electrical equipment (motor starters, local isolators and the like) which have been supplied with items of plant.

25.4.6.5

Power connection to equipment shall be described and enumerated identifying equipment to be connected stating cable size or equipment rating and grouped according to switchboard origin.

25.4.7 Painting

25.4.7.1

Painting to mechanical services shall be measured in accordance with section 35.

25.4.7.2

Painting of equipment items, valves and the like shall be enumerated.

25.4.7.3

Painting of hangers, fixings, supports, duct flanges and the like shall be described and included in the item.

25.4.7.4

Painting to hangers and supports carrying equipment not otherwise painted (for example insulated pipework or ductwork or of support systems common to more than one service) shall be measured separately.

25.4.8 Sundries

25.4.8.1

Support systems where drawn or specified to carry multiple services, access platforms and the like shall be measured separately in accordance with section 15.

25.4.8.2

The provision of sleeves for building in or the drilling of holes into the building structure shall be enumerated.

25.4.8.3

The making good, packing, sealing or fire rating of building penetrations shall be enumerated.

25.4.8.4

Flashing to or waterproofing of flues, pipes or ducts shall be enumerated.

25.4.8.5

Identification of pipework, ductwork, valves and equipment shall be itemised.

25.4.9 General

25.4.9.1

An item shall be scheduled for obtaining all necessary approvals.

25.4.9.2

Provision of shop drawings, operating and maintenance manuals, as-built drawings and the like shall be itemised.

25.4.9.3

Testing and commissioning shall be itemised. Provision of fuel, power, lubricants, etc. shall be included in the description.

25.4.9.4

The provision of spares and the like shall be itemised.

25.4.9.5

Planned preventive maintenance, plant operation, client instruction and the like shall be itemised. If such work is to be carried out after the date for contract completion it shall be stated in the description.

SECTION 26 – FIRE PROTECTION

26.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

26.2 GENERAL PRINCIPLES

26.2.1

The work shall be scheduled under the following general classifications:

- (a) Electrical and pneumatic systems;
- (b) Sprinklers;
- (c) First aid fire protection.

26.2.2

Surface run work shall be scheduled separately from concealed work where practicable.

26.3 MEASUREMENT PROCEDURE

26.3.1 Electrical and pneumatic

26.3.1.1

Indicator panels, battery units, trickle chargers cylinders and pumps shall be enumerated. Reference shall be made to relevant specification clauses and the drawings.

26.3.1.2

Subcircuit wiring or pneumatic tubing shall be measured for each subcircuit giving the number of terminations to detectors, call points and alerting devices together with the size and type of cable or tubing.

26.3.1.3

Detectors, call points and alerting devices shall be enumerated.

26.3.1.4

Trunking and traywork shall be measured as described in section 28.

26.3.2 Sprinklers

26.3.2.1

Sprinkler systems shall be measured in accordance with the relevant clauses of section 25, Pipework and, 26.3.1.

26.3.2.2

Sprinkler heads and guards shall be enumerated.

26.3.3 First aid

26.3.3.1

Hand held fire extinguishers shall be enumerated.

26.3.3.2

Fire hose reel systems shall be measured in accordance with section 23.

26.3.3.3

Fire hose reels shall be enumerated.

26.3.4 Sundries

26.3.4.1

The provision of sleeves for building in or the drilling of holes into the building structure shall be enumerated.

26.3.4.2

The making good, packing, sealing or fire rating of building penetrations shall be enumerated.

26.3.5 General

26.3.5.1

An item shall be scheduled for obtaining all necessary approvals.

26.3.5.2

Testing and commissioning shall be itemised.

26.3.5.3

Provision of shop drawings, operating and maintenance manuals, as-built drawings and the like shall be itemised.

SECTION 27 – LIFTS AND ESCALATORS

27.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

27.2 PREAMBLES

27.2.1

The type of lift or escalator, the total rise (i.e., floor level at lowest level served to floor level at highest level served), number of stops, maximum capacity or loading, and the speed shall be stated.

27.3 GENERAL PRINCIPLES

27.3.1

Builders work such as supplying and building in of plates, bolts, machine and lifting beams and the like, scaffolding to lift shafts, pit ladders and screens, unistruts etc. where not supplied by the lift sub-contractor, shall be scheduled in the appropriate section.

27.3.2

Building in of items normally supplied by the lift and escalator sub-contractor shall be scheduled in this section.

27.4 MEASUREMENT PROCEDURE

27.4.1 Lifts

27.4.1.1

The dimensions, width, depth and height shall be stated. The construction of the platform and car shall be described with all internal linings and finishes stated. The provision of threshold plates, handrails, telephone cabinet, protective padded covers, doors and jambs, lighting, operating buttons and ventilation shall be stated.

27.4.1.2

Ropes and counterweights shall be described and enumerated.

27.4.1.3

Electrical work and control equipment shall be described and enumerated.

27.4.1.4

Motors shall be described and enumerated.

27.4.1.5

Hall operating buttons, indicators, faceplates, locking devices and signal fixture faceplates shall be described as to material and surface finish.

27.4.1.6

Doors shall be described giving size and type of construction, whether sliding, bi-parting, manual or automatic and surface finish stated.

27.4.1.7

Sills, jamb and head linings and architraves shall be described giving material sectional size and length in linear metres.

27.4.1.8

Supply of unistruts or other cast in items shall be described and enumerated.

27.4.1.9

Guide rails and ancillaries shall be described and enumerated.

27.4.1.10

Buffers and supports shall be described and enumerated.

27.4.2 Escalators

27.4.2.1

The type of escalator, the total rise, length of going, width, speed and type of finish shall be stated and enumerated.

27.4.3 Sundries

27.4.3.1

Any other work not specifically mentioned above but necessary for the proper function of the lifts or escalators in accordance with the specifications.

27.4.3.2

Building in:

- (a) Unistruts shall be enumerated;
- (b) Grouting architraves, sills and trim shall be enumerated.

27.4.4 General

27.4.4.1

An item shall be scheduled for obtaining all necessary approvals.

27.4.4.2

Testing requirements shall be stated.

27.4.4.3

Any special maintenance requirements shall be stated.

27.4.4.4

Provision of shop drawings, operating and maintenance manuals, as-built drawings and the like shall be itemised.

SECTION 28 – ELECTRICAL SERVICES

28.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

28.2 PREAMBLES

28.2.1 Rates to include

- (a) Forming holes other than holes through concrete, concrete masonry, brickwork and steel;
- (b) Cables, wiring, fixings and outlet boxes in subcircuits;
- (c) Catenary wires and timber battens;
- (d) Conduit, conduit fittings, boxes, draw wires and earth wires;
- (e) Fittings such as roses, holders, flex and the like;
- (f) Identification of plugs, switches, isolators and the like.

28.3 GENERAL PRINCIPLES

28.3.1

Surface run work shall be scheduled separately from concealed work.

28.3.2

The position of outlets and the material to which they are fixed shall be stated.

28.4 MEASUREMENT PROCEDURE

28.4.1 Boards

Switchboards and distribution boards shall be described and enumerated. Reference shall be made to relevant drawings and specification clauses. The position of and the method of fixing such boards shall be stated.

28.4.2 Mains

28.4.2.1

The incoming supply connection shall be described and enumerated.

28.4.2.2

Mains and submains shall be measured in metres of route length giving the size and type of cable and the method of fixing. An allowance shall be added of 2 metres per end for tails. Excavation, protective covering and bedding shall be measured separately in metres. Opening of roads, footpaths and the like shall be measured as extra value. Making good if required shall be measured and described separately.

28.4.2.3

Insulators, cable terminations including boxes, poles and the like shall be enumerated.

28.4.3 Trunking

28.4.3.1

Trunking, cable trays and ladders shall be measured in metres.

28.4.3.2

Changes of direction, branches, stop ends and the like shall be enumerated giving the size and type.

28.4.3.3

Hangers, supports and other fixings shall be included in the description of the item. Hangers or frames carrying multiple trays, where drawn or specified, shall be measured separately.

28.4.4 Circuits

Wiring shall be enumerated and grouped according to distribution board origin and type and size of cable. The number of terminations to lights, switches, plug sockets and the like shall be included in the description.

28.4.5 Fittings

28.4.5.1

Light fittings shall be enumerated.

28.4.5.2

Lamps and tubes shall be enumerated, but may be measured with the fittings and so stated.

28.4.5.3

Plug sockets, switches, isolators and the like shall be enumerated.

28.4.5.4

Appliances and their fixing, where required, shall be enumerated.

28.4.5.5

Wiring-in of appliances shall be enumerated.

28.4.6 Special systems

28.4.6.1

Each special system such as clocks, bell systems, communication systems, data networks, radio, television, security systems and the like shall be measured separately, in accordance with the relevant clauses of this section.

28.4.6.2

Any special identification shall be measured separately.

28.4.6.3

All items such as earthing requirements, lightning conductors, and transformers not covered in this section shall be enumerated separately, giving any special requirements.

28.4.7 General

28.4.7.1

An item shall be scheduled for obtaining all necessary approvals.

28.4.7.2

An item shall be scheduled for testing.

28.4.7.3

Provision of shop drawings, operating and maintenance manuals, as-built drawings and the like shall be itemised.

SECTION 29 – SOLID PLASTER

29.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

29.2 PREAMBLES

29.2.1 Rates to include

- (a) Temporary rules, grounds, screeds and the like;
- (b) Internal angles other than coved angles;
- (c) Making good around pipes, sanitary fittings and the like.

29.3 GENERAL PRINCIPLES

29.3.1

Solid plaster shall be described and the number of coats, composition and finished thickness shall be stated. The description shall include the preparation of surfaces to be plastered, and surface finish of plaster.

29.3.2

Exterior work shall be scheduled separately from interior work.

29.3.3

Plaster shall, unless otherwise required, be scheduled in square metres of surface area covered.

29.4 MEASUREMENT PROCEDURE

29.4.1

Plaster on concrete, blockwork, brickwork, sheet foam insulation, backing board or other surfaces shall be each measured separately.

29.4.2

Plaster on lathing shall be measured separately and the description shall include the lathing.

29.4.3

Work to floors, walls and ceilings shall be measured separately. Work to floors to falls or crossfalls shall be so described. Work to sloping ceilings shall be measured separately.

29.4.4

Work to integral beams, perimeter of openings and to integral columns shall be measured with the wall or ceiling and this shall be stated.

29.4.5

Work to isolated beams and to isolated columns shall each be measured separately.

29.4.6

Beams or columns where the substrate or finish are different from the abutting ceilings or walls respectively shall be measured as isolated work.

29.4.7

Work not exceeding 300 mm in width and included in the area shall be measured in metres as extra value and classified under the following groups:

- (a) Not exceeding 150 mm in width;
- (b) Exceeding 150 mm but not exceeding 300 mm in width.

This shall apply to all narrow widths except those in plane surfaces caused by openings and the like.

29.4.8

Deductions shall be made for all openings and obstructions having an area of 0.5 m² and over.

29.4.9

Work to isolated surfaces not exceeding 1.0 m² shall be measured separately.

29.4.10

Solid plaster applied mechanically shall be measured separately.

29.4.11

Arrises, drips, fair edges, junctions with other materials, nosings, rounded angles, grooves, coves, chases and the like shall be measured in metres.

29.4.12

Enrichments, cornices, mouldings, sills, beads, sinkings and the like shall be measured in metres stating the girth and size. Stop ends, mitres, returned ends and the like shall be enumerated.

29.4.13

Plaster to treads, risers, strings, skirtings, upstands, channels and the like shall be measured in metres stating the girth and size.

29.4.14

Plaster to circular, ornamental or modelled work shall be measured separately.

29.4.15

Letters, numerals, isolated enrichments and the like shall be enumerated.

SECTION 30 – PLASTERBOARD LININGS

30.1 OVERVIEW

30.1.1

Refer to section 0, General rules, which shall be read in conjunction with this section.

30.1.2

This section shall apply equally to fibrous plaster and to paper-bound plaster-cored wallboard. Separate work sections for each type of plasterboard lining shall be scheduled.

30.2 PREAMBLES

30.2.1 Rates to include

- (a) All penetrations, cutouts and the like;
- (b) Making good and stopping the same.

30.2.2

Particulars shall be given of:

- (a) Performance qualities required (e.g., sound rating, fire rating etc.);
- (b) Thickness of sheets;
- (c) Special pre-finished or pre-applied treatment;
- (d) Method of fixing and the material to which the lining is fixed;
- (e) Method of stopping including the materials to be used, such as jointing tape and finishing compound as specified.

30.2.3

The typical wall height shall be stated.

30.3 GENERAL PRINCIPLES

30.3.1

Plasterboard shall be described according to its type and physical location in the structure and shall, unless otherwise required, be scheduled in square metres of surface. For multilayer linings the number of layers, finished thickness and the method of fixing shall be stated.

30.3.2

Stopping shall be scheduled separately from the lining for each type of finish required and physical location.

30.3.3

Deductions shall be made for all openings and the like having an area of 1.0 m² and over.

30.3.4

Grounds, battens, metal hangers, or similar fixings for plasterboard shall be scheduled separately under the relevant sections of this Standard but where part of a proprietary system they shall be included in this section.

30.3.5

Circular work shall be scheduled separately. The description shall include the radius of the sweep and state whether the surface is concave or convex.

30.4 MEASUREMENT PROCEDURE

30.4.1

Linings to walls, ceilings, sloping ceilings, stairwells, beams, columns, inside ducts, and inside lift shafts shall be measured separately.

30.4.2

Work not exceeding 300 mm in width shall be measured in metres as extra value. This shall apply to all narrow widths except those in plane surfaces caused by openings and the like.

30.4.3

Beam, column, or duct casings, and the like, where required to be cast in one piece, shall be measured separately in metres. The description shall include the girth and all labours.

30.4.4

Raking and circular cutting shall be measured in metres.

30.4.5

Cutting and fitting into grooved or rebated timber reveal linings shall be measured in metres.

30.4.6

Cornices, mouldings, coves, and the like shall be measured in metres with internal and external angles, stop ends, returned ends, and the like enumerated.

30.4.7

Projections or inserts, such as casings to corbels or sunken panels, shall be enumerated.

30.4.8

Corner battens, metal corner strips and edge beads, jointer and internal and external corner mouldings shall each be described and measured in metres.

30.4.9 Stopping

30.4.9.1

Stopping shall be measured in square metres.

30.4.9.2

The forming of fair internal and external angles, joints to other materials, fair edges, special cast internal and external angles, and the like shall be measured in metres, the description shall include stopping.

30.4.10 Acoustic and fire rated walls

Special treatment to sound and fire rated partitions shall be described and measured. The treatment to any fittings (e.g. switch boxes) in such walls shall be described and enumerated.

SECTION 31 – GRID SUSPENDED CEILINGS

31.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

31.2 PREAMBLES

31.2.1 Rates to include

- (a) Straight cutting on tiles;
- (b) Seismic supports, including supports for lights.

31.3 GENERAL PRINCIPLES

31.3.1

Seismic classification shall be stated (e.g., Class III Zone C) where specified.

31.3.2

Exterior ceilings shall be scheduled separately.

31.3.3

For sloping ceilings the pitch shall be stated in degrees from horizontal.

31.3.4

Note shall be made if services are in the ceiling space.

31.4 MEASUREMENT PROCEDURE

31.4.1

The suspension system shall be measured in square metres. The description shall include rails, hangers, spacers, and the like, the type and method of fixing, and the background material from which the system is suspended. The ceiling height above floor level and depth of ceiling space shall be stated.

31.4.2

Trimming suspension system for light fittings, grilles, and the like shall be enumerated as extra value.

31.4.3

Edge trim to the periphery of the suspension system or to columns, openings and the like, shall be measured in metres and the method of fixing shall be described. Trim to columns, openings and the like shall be measured as extra value and total number stated.

31.4.4

Ceiling tiles or infill panels shall be described and measured in square metres. Deductions for openings shall be made for whole tiles or whole panels only.

31.4.5

Openings or penetrations in ceiling tiles or panels for light fittings, grilles, sprinkler heads and the like shall be enumerated.

31.4.6

Raking and circular cutting to ceiling tiles or panels shall be measured in metres.

31.4.7

Seismic breaks, trunkings and the like shall be measured in metres.

31.4.8

The provision of shop drawings and design submissions shall be itemised.

SECTION 32 – TILING

32.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

32.2 PREAMBLES

32.2.1 Rates to include

- (a) Straight cutting;
- (b) Protection and cleaning on completion of tiling.

32.3 GENERAL PRINCIPLES

32.3.1

Tiling work shall be described and the type, thickness, size and shape of tiles shall be stated. The description shall include for preparation of surfaces to be tiled, the bedding or method of fixing, and the width, treatment and layout of joints.

32.3.2

Exterior work shall be scheduled separately from interior work.

32.3.3

Tiling shall, unless otherwise required, be scheduled in square metres of surface area covered.

32.4 MEASUREMENT PROCEDURE

32.4.1

Tiling on concrete, masonry, wallboard or other surfaces shall be measured separately.

32.4.2

Work to floors, walls and ceilings shall be measured separately. Work to floors to falls or cross falls shall be so described. Work to sloping ceilings shall be measured separately.

32.4.3

Work to integral beams, perimeter of openings and to integral columns shall be measured with the wall or ceiling and this shall be stated.

32.4.4

Work to isolated beams and to isolated columns shall be measured separately.

32.4.5

Work not exceeding 300 mm in width shall be measured in metres stating the width. This shall apply to all narrow widths except those in plane surfaces caused by openings and the like.

32.4.6

Deductions shall be made for all openings and obstructions having an area of 0.2 m² and over.

32.4.7

Work to isolated surfaces not exceeding 1.0 m² shall be measured separately.

- 32.4.8**
Tiling to circular work shall be measured separately.
- 32.4.9**
Raking and circular cutting shall be measured in metres.
- 32.4.10**
Skirtings, mouldings, isolated bands, coves, sinkings and the like shall be described and measured in metres. Mitres, angles, insets and the like shall be enumerated.
- 32.4.11**
Treads, risers, strings and the like shall be measured in metres stating the width.
- 32.4.12**
Integral bands of tiles of different colour, texture or size to the general tiling and round edge tiles, shall be measured in metres as extra value, stating the width when appropriate.
- 32.4.13**
Expansion joints shall be described and measured in metres.
- 32.4.14**
Cutting and fitting around all openings and obstructions of less than 0.2 m² and cutting and fitting around pipes, standards and the like, shall be enumerated.
- 32.4.15**
Polishing and or specialist surface treatments shall be measured in square metres.

SECTION 33 – TERRAZZO WORK

33.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

33.2 PREAMBLES

33.2.1

Particulars shall be given of:

- (a) Proportions of mix to be used;
- (b) In situ or precast work.

33.2.2 Rates to include

- (a) Moulds and casings for precast work;
- (b) Grinding and polishing exposed face;
- (c) Protection and cleaning.

33.3 GENERAL PRINCIPLES

33.3.1

Terrazzo shall be scheduled in square metres of surface area covered, giving the thickness, position in structure and method of fixing, bedding or placing.

33.3.2

Deductions shall be made for all openings having an area of 0.2 m² and over.

33.3.3

Anti-static, specially coloured, patterned, or other special work shall be scheduled separately. The method of earthing anti-static floors shall be stated.

33.4 MEASUREMENT PROCEDURE

33.4.1

Partition panels, column facings, and the like shall be enumerated for each size and thickness.

33.4.2

Skirtings, coves, sills, copings, and the like shall be described and measured in metres. Angles, stop-ends, and the like shall be enumerated.

33.4.3

Work not exceeding 300 mm in width shall be measured in metres as extra value. This shall apply to all narrow widths except those in plane surfaces caused by openings and the like.

33.4.4

Stair treads, nosings, and the like shall be enumerated.

33.4.5

Joint strips and the like shall be measured in metres.

33.4.6

Polished edges, sinkings, bevellings, external angles and the like shall be measured in metres.

33.4.7

The forming of holes, building-in of items, making good around pipes and the like shall be enumerated.

33.4.8

Fire surrounds, hearths, sink tops, benches, shower trays and the like shall be enumerated.

33.4.9

Ornamental work shall be measured separately and enumerated.

SECTION 34 - FLOOR COVERINGS

34.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

34.2 PREAMBLES

34.2.1

Particulars shall be given of:

- (a) Type and quality of material;
- (b) Thickness and mass of material;
- (c) Underlay;
- (d) Nature of background material;
- (e) Method of fixing and jointing;
- (f) Pattern matching;
- (g) Inlays, artwork, special patterns and the like.

34.2.2 Rates to include

- (a) Preparation of surfaces;
- (b) Adhesive;
- (c) Scribing to all abutting surfaces.

34.3 GENERAL PRINCIPLES

34.3.1

The principles for the measurement of floor coverings shall apply equally in the measurement of similar coverings to walls or ceilings.

34.3.2

Coverings shall be scheduled in square metres inclusive of turnups. The description shall include any underlays.

34.3.3

Small and isolated areas not exceeding 2.0 m² shall be described and scheduled separately.

34.3.4

Deductions shall be made for all openings having an area of 0.5 m² and over for tiles and 2.0 m² and over for sheet material and carpet.

34.4 MEASUREMENT PROCEDURE**34.4.1**

Raking and circular cutting shall be scheduled in metres.

34.4.2

Cutting and fitting around all openings and obstructions of less than 0.5 m² shall be enumerated.

34.4.3

Work not exceeding 300 mm in width shall be measured in metres as extra value. This shall apply to all narrow widths except those in plane surfaces caused by openings and the like.

34.4.4

Turn-ups, borders, coves, and the like shall be measured in metres as extra value and the height or width stated. Internal and external angles shall be enumerated.

34.4.5

Fillets, timber coves, special edge fixings, threshold strips, and the like shall be measured in metres.

34.4.6

Nosings and coverings to treads, risers, and strings shall be measured in metres, stating size or girth.

34.4.7

Separate skirtings shall be measured in metres. Internal and external angles shall be enumerated as extra value.

34.4.8

Bench tops shall be measured in square metres and enumerated for each group of sizes as appropriate.

34.4.9

Moulded handrails shall be measured in metres. Changes of direction and terminals shall be enumerated as extra value.

34.4.10

Cleaning and/or polishing shall be measured in square metres.

SECTION 35 – PAINTING AND SPECIALIST FINISHES

35.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

35.2 PREAMBLES

35.2.1

Particulars shall be given of:

- (a) Proprietary brands where specified;
- (b) Type and quality of materials;
- (c) Any specified application methods;
- (d) The general location and the height to which work rises.

35.2.2 Rates to include

- (a) All preparatory work, including sanding between coats, and stopping to nail and screw holes etc.;
- (b) Cutting-in;
- (c) Masking.

35.3 GENERAL PRINCIPLES

35.3.1

Where appropriate separate sections of the schedule (bill) of quantities shall be provided for:

- (a) Painting;
- (b) Paper hanging;
- (c) Specialist finishes and spray coatings;
- (d) Industrial membranes and coatings.

35.3.2

Surfaces to be treated shall be described and the work on each type of surface shall be scheduled separately.

35.3.3

Work shall be scheduled separately for each type of material and finish.

35.3.4

Material requiring treatment before fixing shall be scheduled separately.

35.3.5

New work shall be scheduled separately from work on previously decorated surfaces.

35.3.6

Exterior work shall be scheduled separately from interior work.

35.3.7

Except where otherwise stated, work shall be scheduled in square metres of actual surface area covered.

35.3.8

Work to surfaces not exceeding 300 mm in girth and cut-in both edges and to isolated surfaces not exceeding 300 mm girth shall be scheduled in metres in the following groups:

- (a) Not exceeding 150 mm in girth;
- (b) Exceeding 150 mm and not exceeding 300 mm in girth.

35.3.9

Work to confined spaces, insides of fittings, and the like shall be scheduled separately.

35.3.10

Deductions shall be made for openings having an area of 1.0 m² and over.

35.3.11

Windows, borrowed lights, and fully glazed doors shall be measured flat overall, and shall be scheduled in square metres. The description shall include cutting-in to glazed or other panels.

35.3.12

Work to isolated surfaces not exceeding 1.0 m² shall be enumerated.

35.3.13

Work in more than one colour on one flat plane shall be scheduled separately and the line between colours shall be scheduled in metres.

35.4 MEASUREMENT PROCEDURE

35.4.1 Painting

35.4.1.1

Backpriming to weatherboards, window frames, door frames and the like shall be measured separately in square metres.

35.4.1.2

Trellis, picket fences and the like shall be described as open work, measured flat overall both sides, and measured in square metres.

35.4.1.3

Wood preservatives, staining, sealing, varnishing, burning off, stripping and the like shall be measured as for painting.

35.4.2 Wallpaper and associated treatments

35.4.2.1

The type of material shall be described, and the description shall include sealing, pasting, and hanging and shall be measured in square metres.

35.4.2.2

Stripping of old work, scrimming, taping, repapering and the like shall be measured separately in square metres.

35.4.2.3

Borders, friezes and the like shall be measured in metres.

35.4.3 Polishing

35.4.3.1

French polishing, fuming, wax polishing and the like shall be measured separately. Preparatory work and bodying-in shall be described with the items where they apply.

35.4.3.2

Frames, bars, handrails and the like shall be measured in metres. The description shall include the girth.

35.4.4 Signwriting

35.4.4.1

Materials and workmanship shall be described.

35.4.4.2

Letters, figures, stops and the like shall be enumerated, described, and the size measured in millimetres.

35.4.4.3

Gilding shall be described and the height of letters or lines shall be stated. Gilding on surfaces shall be measured as the net surface area. Gilding to lines, mouldings, enrichments and the like shall be measured in metres. Ornaments and the like shall be enumerated.

SECTION 36 – GLAZING

36.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

36.2 PREAMBLES

36.2.1 Rates to include

Cleaning on completion of glazing.

36.3 GENERAL PRINCIPLES

36.3.1

Glazing work shall be described and the various types, qualities and thicknesses shall be stated. The description shall include the type of glazing compound and method of fixing (e.g., puttied, bedded, beaded or with gaskets), the material to which fixed and type of unit.

36.3.2

References to glazing in this section shall be taken to include all types of glazing materials.

36.3.3

Unless otherwise described in this section, all glazing material shall be measured as the actual required size and shall be scheduled in square metres.

36.3.4

Each type of glazing shall be scheduled separately and the number of panes shall be stated in the description.

36.3.5

Reglazing work shall be scheduled separately, and the location of such work shall be stated.

36.3.6

Internal and external work shall be scheduled separately.

36.4 MEASUREMENT PROCEDURE

36.4.1

Float glass shall be classified under the following sizes:

- (a) 0-2 m² ;
- (b) Exceeding 2.0 m² and not exceeding 6.0 m² ;
- (c) Exceeding 6.0 m².

36.4.2

Where any edge of float glass exceeds 3.0 m the glass shall be measured separately.

36.4.3

All other types of glazing shall be measured with no reference to size grouping.

36.4.4

The following shall be measured separately:

- (a) Glazing of irregular shape measured as the smallest rectangular size out of which the shape can be cut;
- (b) Curved and bent glazing, stating the size of the pane and the radius of the bend or curve;
- (c) Double or multiple glazing. Each layer shall be measured;
- (d) Sealed double glazing units shall be enumerated and approximate size stated;
- (e) Louvre blades shall be measured in metres stating the number of blades and labours to edges;
- (f) Leadlights and copperlights shall be enumerated stating the approximate size of the pane;
- (g) Glazed doors, slides, mirrors (including backing material) splashbacks, and the like shall be enumerated. The description shall include all labours such as grinding to edges, forming finger recesses, drilling for hardware and the like, and the type of fixing.

36.4.5

Circular cutting shall be measured in metres.

36.4.6

Where glazing is fixed in preformed bedding material, this material shall be measured separately in metres.

36.4.7

Polishing, grinding, bevelling of edges, and the like shall be measured in metres according to the total perimeter of the sheet to be worked as follows:

- (a) Not exceeding 4.0 m in perimeter;
- (b) Exceeding 4.0 m and not exceeding 6.0 m in perimeter;
- (c) Exceeding 6.0 m and not exceeding 9.0 m in perimeter;
- (d) Exceeding 9.0 m in perimeter.

The thickness and number of panes in each classification shall be given in the description.

36.4.8

The jointing of glazing shall be measured in metres and the type of fixing or compound stated.

36.4.9

Silvering, embossing, etching, sand blasting and the like shall be enumerated stating the design, size and number of panes.

36.4.10

The cutting of holes, openings and the like shall be enumerated stating both the size of opening and size of the pane.

36.4.11 Glass blocks

36.4.11.1

Glass blocks shall be measured in accordance with section 13.

36.4.11.2

Proprietary glass block jointing systems shall be described.

SECTION 37 – SITEWORKS

37.1 OVERVIEW

Refer to section 0, General rules, which shall be read in conjunction with this section.

37.2 GENERAL PRINCIPLES

37.2.1

Siteworks shall be clearly divided into its various subsections.

37.2.2

Except as follows, each subsection of the work shall be scheduled in this section in accordance with the provisions of the relevant section of this document.

37.2.3

Unless stated otherwise, separate items shall be measured for excavation, trimming, backfilling and drainage and foundations.

37.3 MEASUREMENT PROCEDURE

37.3.1 Roothing

Sealing shall be measured in square metres:

- (a) For plantmix or hotmix type surfaces the description shall state the thickness and shall include for tack coat where required,
- (b) For chip seal surfaces the description shall include for tack coat, the number of coats of tar and chips.

37.3.2 Crossings

Crossings and the like shall be enumerated. The description shall include the size, construction, sub base, basecourse, reinforcing and surface finish. Reference shall be given to Local Authority standards and requirements where applicable.

37.3.3 Road marking

37.3.3.1

Road marking shall be measured in metres stating the pattern, colour and width of line.

37.3.3.2

Direction arrows, pedestrian crossings, words and numbers shall be enumerated, stating the size, colour and style.

37.3.4 Proprietary paving

37.3.4.1

Proprietary paving stones shall be measured in accordance with section 32. The description shall include for:

- (a) Trimming sub base;
- (b) Proof rolling (if required);
- (c) Sub base or basecourse layers, stating thickness and grade;
- (d) Paving slabs stating type, size, orientation, thickness, colour and laying pattern;
- (e) Final compaction including additional sand layer if required and removal on completion.

37.3.4.2

The perimeters to paving shall be measured in metres with circular work measured separately.

37.3.5 Landscaping

37.3.5.1

Excavation to areas shall be measured in cubic metres.

37.3.5.2

Topsoil shall be measured in cubic metres. The description shall include the average depth of topsoil.

37.3.5.3

Plants shall be enumerated.

37.3.5.4

Where no landscaping plan has been prepared, areas to be planted or sown shall be measured in square metres.

37.3.5.5

Ground cover such as bark, polythene etc. shall be measured in square metres. The description shall include the thickness of cover and the grade.

37.3.5.6

Rock pools, rock gardens and the like shall be measured in square metres. The description shall include the type of construction, pattern, layout etc. Reference shall be made to any drawings or details given.

37.3.5.7

Crib walls, pole walls and the like shall be measured in square metres of face area. The description shall include the size and type of components and the height of the wall, and any integral filling.

37.3.6 Sundries

Spraying with weed-killer shall be measured in square metres.

SECTION 38 – INCLUDED SUMS

38.1 SCOPE

This section forms a memorandum list only of all included sums contained in the various sections.

38.2 GENERAL PRINCIPLES

Details shall be given of the value of each sum and the section in which it has been included.

38.3 MEASUREMENT PROCEDURE

38.3.1

Contingency, Provisional, Net or Prime Cost (P.C.) sums and the like shall be described and scheduled in the relevant sections.

38.3.2

Where required, items shall be scheduled for margin, taking delivery, storage, attendance, fixing and the like.

APPENDIX A – SURFACE AREA OF DUCTWORK

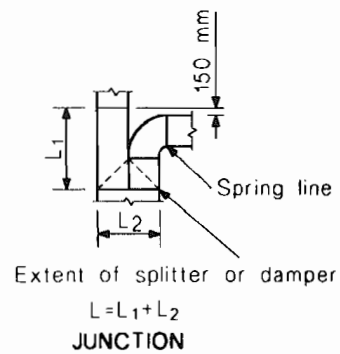
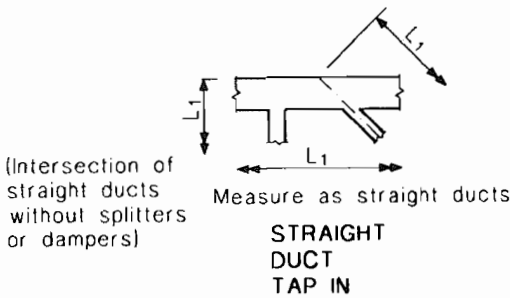
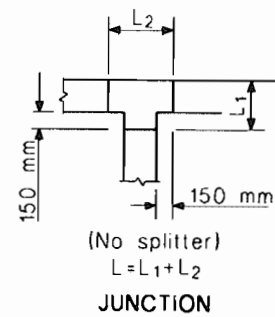
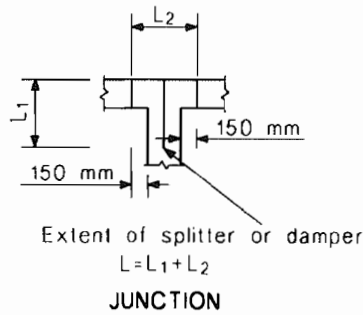
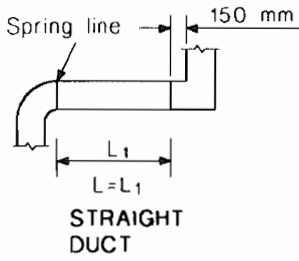
A1

This Appendix illustrates the method of calculating surface area of ductwork as required by 25.4.3.3.

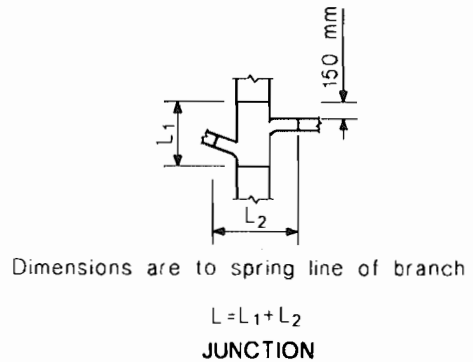
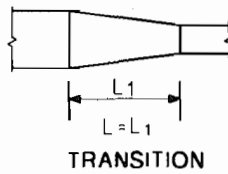
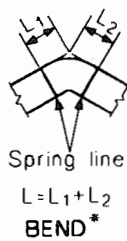
NZS 4202:1995

All calculations are based on air stream size

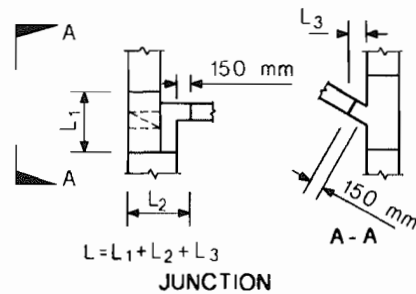
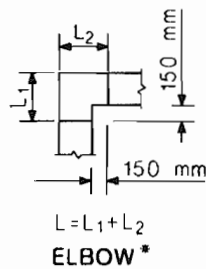
Surface area = $P \times L$, where P = perimeter of largest end
 L = length of duct or fitting calculated as follows:



(Any angle up to and including 90°)



(Any angle up to and including 90°)



- * If over 90° to be considered two bends - one 90°, the other the remainder

Duct pieces not conforming with the above diagrams shall have the area calculated by applying the same principles.

Lines in diagrams do not necessarily indicate the positions of joints in the ductwork. Splitters are not measured but are deemed to be covered by the foregoing formulae.

Figure A1 – Surface area of ductwork

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Approved by the Standards Council on 29 May 1995 to be a New Zealand Standard pursuant to the provisions of section 10 of the Standards Act 1988.

First published: 19 June 1995

The following references relate to this Standard:

Project No. P4202

Draft for comment No. DZ 4202

ISBN (Print): 978-1-86975-247-7

ISBN (PDF): 978-1-86975-248-4

Typeset by: Standards New Zealand

Printed by: The Colour Guy



STANDARDS

NEW ZEALAND

PAEREWĀ AOTEAROA

